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Gwarube confident matric exams will run smoothly

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EDUCATION NEWS

Gwarube confident matric exams will run smoothly and prove to be a success

SIMON NARE

Basic Education Minister Siviwe Gwarube says it's all systems go for the 2025 National Senior Certificate examinations and is confident they will be a success.

A total of 767,007 full-time candidates and 136,966 part-time candidates are writing the exams this year.

The minister told Inside Education that the department was working closely with provinces, districts, and schools and has employed measures to ensure that the exams go smoothly.

"Printing, packaging, and distribution security protocols have been tested and tightened, markers [have been] trained, and the examination centres have been verified. Our focus is to guarantee that every learner is afforded a fair, credible, and smooth examination process," Gwarube said.

"The psychosocial well-being of learners is something we are prioritising; we have expanded



All systems go: Basic Education Minister Siviwe Gwarube is confident that the 2025 National Senior Certificate examinations will be a success. - Photo: Eddie Mtsweni.

learner support programmes and counselling to ensure that matriculants are emotionally and mentally ready to sit for the exams." On exam paper leaks, Gwaru-

be said the department had appointed a forensic investigation firm to track leaks from last year to prevent that from happening this year.

"Preliminary information shows that the leak did not originate from the Department of Basic Education, and our systems remain secure. We are comfortable that there will be no leaks from the department," she said.

Regarding the pass rate, Gwarube said the department was not expecting to reduce it by a single figure but was instead looking forward to an overall good performance for the year.

"This confidence is based on the intensive interventions made throughout their schooling years, from extra tuition in matric, including winter and autumn camps and weekend classes, to enhanced teacher support and curriculum recovery initiatives.

"Our ambition is to improve the quality of education so that more young people can access universities, TVET colleges, and the world of work," she said.

Grade 12 learners share their exam hopes, challenges, and strategies

Ahead of the start of the final matric exams, Grade 12 learners across South Africa were putting in long hours to make this final stretch count.

Mhlonishwa Hlatshwayo, 18, from Kwa-Mahlobo Secondary School in Soweto, Johannesburg, said he was giving his all to ensure a strong finish to his matric year.

"I follow a study timetable that helps me balance all my subjects," he said.

"I use past exam papers to test myself, attend extra classes at school, and also use online resources and summaries."

Mhlonishwa is writing English, isiZulu, Mathematics, Life Orientation, Physical Sciences, Life Sciences, and Geography.

He said Mathematics and Geography are his favourites "because they help me understand how things work and how people interact with their environment."

Like many learners, he faced several challenges.

"Load shedding is one of my biggest challenges where I stay," he said.

"Sometimes it's hard to concentrate when there are power cuts at home. I also get anxious before big exams, so I'm learning how to manage stress better," he said.

He added that his school has been very supportive.

"My school is giving us extra classes, past exam papers, and motivational talks, which really inspire me because they care about our success," he said.

"Schools should provide time management and exam technique sessions to help us handle stress and improve performance. Organising mock exams under real exam conditions would also boost our confidence."

Seventeen-year-old Asimbonge Bhengu from Winners Academy in Blairgowrie, Randburg, shared his study strategies as he prepares for his final matric exams in November.

"One of my strategies is to make a study plan and tackle my challenging subjects by practising them every day," he said.

He admitted to being nervous about the upcoming exams.

"On a scale of 1 to 10, I'm at about a 6," he said.

"My grades have dropped a little, so I need to push harder."

Eighteen-year-old Piletji Michael Thai from Hoërskool Akasia in Pretoria has a detailed and disciplined study plan.

"I follow a structured schedule from Monday to Sunday to stay consistent and focused," he said.

"Every morning, I start my day with daily devotion and quiet prayer before beginning my study sessions."

Thai rotates between his main subjects — Mathematics and Physical Sciences — spending about six hours each day focusing on one of them.

As an Engineering Graphics and Design student, he also practices drawing for two hours daily to sharpen his technical and design skills.

He takes regular breaks, goes for walks to refresh his mind, and ends his study sessions by 10 p.m.

On Sundays, he focuses on church and family time.

He admits to facing financial difficulties.

"Being raised by a single mother, things can get tough, but I try to make the best of what I have," he says.

After matric, he plans to study Aeronautical Engineering at the University of the Witwatersrand.

"Since I was young, I've been fascinated by how planes and spacecraft work," he said.

Reporting by: Lebone Rodah Mosima, Charmaine Ndlela and Thapelo Mpanlanyane.

CREDITS

Publisher:

• Matuma Letsoalo

Acting Editor-in-Chief:

• Charles Molele

Contributing Editor:

• Thebe Mabanga

News Editor:

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Contributors:

• Johnathan Paoli
• Simon Nare
• Thapelo Molefe
• Xolisa Phillip

Photographer:

• Eddie Mtsweni

Subeditor:

• Richard Gibbs

Layout:

• Lethabo Hlahatsi

Twitter:

• @Inside_Edu

Facebook:

• Inside Education

Tel:

• +27 (011) 312 2206

Email:

• info@insideeducation.co.za



 www.ewseta.org.za

EDUCATION NEWS

NSFAS in top gear for 2026 applications

THEBE MABANGA

The National Student Financial Aid Scheme (NSFAS) is geared up for the 2026 academic year, with digitisation and the introduction of biometrics at the heart of the application process.

The application cycle for a new academic year is the first under the leadership of a new board, led by Dr Karen Stander, and an executive, led by acting CEO Waseem Carrim. Applications are set to close on November 15.

“The application process is robust, user-friendly and supported by strong front-end and back-end functionality,” says Carrim. “The larger challenge is the sustainability of NSFAS and its ability to provide ongoing medium-term funding to all qualifying, financially and academically eligible beneficiaries.”

In mid-October, at the midway stage of the application process, over 420,000 applications had been received for the 2026 academic year, with thousands more expected before the closing date.

Carrim says NSFAS has introduced innovations such as digital signatures and storage of all forms and agreements. They have also introduced biometrics for processes such as change of password and bank details, as well as physical identification of applicants and linking them to their institution. This is particularly important for curbing fraud in instances where an applicant has applied through multiple in-



Graduation success: NSFAS has already received almost half a million applications for financial and accommodation support from prospective students. - Photo: Vecteezy.com

stitutions.

Support is available by telephone, email, social media and walk-in applications, and a total of 80 consultants are available to assist with incoming calls.

Applicants can apply at walk-ins at NSFAS offices, the National Youth Development Agency, TVET college campuses and youth desks at municipalities.

The Minister of Higher Education and Training, Buti Manamela, points out that learners and their families must be confident that if they apply for NSFAS and they qualify, they will get the funding, or if they are allocated accommodation, it will be decent. Rebuilding trust will be key.

“The halfway mark on the NSFAS application window is

upon us, and all prospective students who dream of studying at a university or TVET college next year must apply now. Don’t wait until the last minute; this is your chance to secure your future,” he said.

The Department of Higher Education and Training, together with NSFAS, has noted strong participation from matriculants, gap-year students, and returning learners. The department notes that many eligible applicants have yet to apply, especially from rural and township areas.

Manamela says there will be no extension or reopening of the applications and urged applicants who do not have their matric results to use their Grade 11 results and update these later.

The minister called on teachers, university students, and community leaders to help learners apply.

NSFAS funds studies to all public universities, universities of technology, and TVET colleges, and Manamela urged students and parents to explore all options, including TVET colleges, which he says offer a pathway to employment with the range of technical and vocational skills they offer, as well as artisan, technical, and entrepreneurial careers.

“I would like to urge parents to look at their local TVET colleges. See where their children will study and inspect facilities such as workshops for engineering studies. If you want to become a

fitter, a welder, a solar technician, or a cybersecurity analyst, this is your moment. Apply to NSFAS today and take the first step toward your qualification.”

He added that NSFAS teams, in collaboration with the Department of Higher Education and Training and SETAs, are visiting schools, community halls, and youth centres to provide on-the-spot assistance with applications and queries.

The department also announced that during this application window, it will be setting up an NSFAS War Room that will operate into the new academic year “until the last query is sorted and the last appeal is addressed,” according to Manamela.

Beyond the application process, NSFAS is also grappling with challenges, including student accommodation as well as payment of allowances.

Carrim says the structural challenges with accommodation relate to the availability of suitable accommodation, especially in rural areas. The construction of student accommodation in suitable areas is part of the government’s infrastructure drive.

He says institutions must also look into how accommodation is allocated and not accept more learners than they can accommodate. NSFAS is reviewing which functions can be handed over to institutions and which can be handled by NSFAS in relation to accommodation and allowance payments.

NSFAS is reviewing all contracts, including those with intermediaries for their services.

KZN cracks down on unsafe scholar transport

THAPELO MOLEFE

KwaZulu-Natal’s roads have become a stage for tragedy as authorities urgently confront the dangers facing scholar transport in the province.

In September, an unroadworthy minibus taxi plunged off KwaKhetha Bridge in Impendle, injuring 20 learners. The driver, who fled the scene, was later arrested, and found with only a learner’s licence and no professional driving permit.

“This driver violated the National Land Transport Act,” Transport and Human Settlements MEC Siboniso Duma said. “We want to remove reckless drivers from our roads — they destroy families and cut short innocent lives.”



Critical concern: MEC for Transport and Human Settlements, Siboniso Duma, during an engagement with religious leaders as part of Transport Month activities in October. - Photo: KZNTransport/Facebook.

The incident highlights a growing crisis. While government-subsidised transport serves 77,369 learners through 84 service providers, more than 234,000 learners still need safe transport. The department’s R343-million budget for 2025/26 faces a R374-million shortfall.

Private scholar transport, often unregulated, remains the biggest concern. Duma announced a new partnership with the Vehicle Testing Association to target unroadworthy vehicles and clamp down on fraudulent roadworthy certificates. Audits of private scholar transport in the uMgungundlovu District began in October.

“Unroadworthy cars must be removed from our roads,” Duma said. “We are tightening legislation, improving driver vetting, and enforcing strict compliance.”

Parents and school governing bodies are urged to help ensure children’s safety by checking vehicle conditions and driver credentials.

During Transport Month, 177 new traffic officers graduated to bolster law enforcement against reckless driving, overloading, and unroadworthy vehicles. Since August, 293 motorists have been arrested for drunk driving.

The department is also investing R14.6 billion over three years to upgrade and reseal roads, surface gravel routes, and build bridges to improve rural access.

“The safety of learners is a collective responsibility,” Duma said. “We call on parents, taxi associations, and authorities to work together so no child’s journey to school becomes a gamble with life.”

MINISTER'S CORNER

Manamela is working towards a stable, expanded, and trusted PSET sector

THEBE MABANGA

Higher Education and Training Minister Buti Manamela has set his department the task of reconfiguring the tertiary education sector and rebuilding trust while demonstrating value for money to South Africans.

Manamela aims for the Post School Education and Training (PSET) sector to produce graduates with a combination of vocational, technical, and academic skills who can make meaningful contributions to meeting the country's development needs.

The minister outlined his vision to Inside Education on the sidelines of the Mandela Sobukwe Leadership Camp for student leaders, held at the University of Johannesburg Island at the Vaal.

In his interaction with student leaders, one of the lessons he sought to impart — and one he applies to his area of work — is that as a leader of an institution or organisation, you are always striving to solve both short-term and long-term challenges simultaneously and, as he puts it, “fix the aeroplane while it is in motion”.

Manamela says he keenly feels the anxieties of students and parents as they worry about gaining access to opportunities in higher education to improve their livelihood prospects.

So, what are his top three priorities, then?

“We have got to change the size and shape of the PSET sector,” Manamela says, emphasising that he would like to direct more resources to growing the TVET and Community and Education Training (CET) college sector, of which he is a product.

In the budget vote presented at the beginning of July by his predecessor, Nobuhle Nkabane, TVET Colleges received R14 billion in the current financial year, which is expected to increase to R14,7 billion in the next.

“The second thing we must do is to rebuild trust,” says Manamela, noting that the process starts with government, employers and other stakeholders delivering on the undertakings they make to learners. “If you apply for financial aid and you qualify, you must know that you will get it. If you are offered accommodation, you must know that it will be decent, and if you produce a qualification, you must know that it will either lead to employment or self-suffi-



Commitment: Higher Education and Training Minister Buti Manamela says his job entails striving to solve both short-term and long-term challenges simultaneously. - Photo: Eddie Mtsweni.

ciency.”

Part of keeping that promise is stabilising the National Student Financial Aid Scheme, which has been beset by several challenges but now has a new leadership in place in the form of a new board led by Dr Karen Stander and an executive team led by Acting CEO Waseem Carrim.

Manamela says the department is working closely with NSFAS, and in July, they requested 60 days to stabilise the organisation, but the department gave them more time.

He notes that in the 91 days to the end of September, there has been noticeable progress, although there have also been what he calls “costly glitches”.

At a recent leadership update, NSFAS announced that it has a R10,6 billion funding deficit. Manamela says the department has had engagements with the National Treasury to address this.

NSFAS says the R10,6 billion deficit is caused by oversubscription to university allocation, which is a result of what Carrim

calls a “perfect storm” in higher education. First, there has been an increase in the number of bachelor's passes, a welcome development, but one that means higher demand for university places.

The second element is that many families are still reeling from a cost-of-living crisis that

pushes them into the eligible income bracket. Third, Carrim says government resources are declining in real terms.

Manamela urges learners, even those with bachelor's passes, to properly understand the Admission Points System for the university and academic programme of their choice.

He also urges parents of learners who are about to write matric to explore alternatives like their nearest TVET college, where parents can personally inspect facilities and workshops.

He argues that the occupational trades that will be launched next year will improve the chances of employment for the country's youth.

The department will, in November, establish an NSFAS “war room” that will process applications for the 2026 academic year and will be operational “until the last issues have been sorted and the last appeal has been resolved”.

Manamela then says that higher education must “justify return on investment” by showing what

they are doing with existing resources before requesting more.

In the July budget vote, Nkabane revealed that the total budget allocation for the current financial year was R142.4 billion, set to increase to R150 billion in 2026/27 and to R158 billion in 2027/28.

“In real terms, this growth is not sufficient to meet growing demands for additional resources,” Manamela says.

Another challenge that Manamela aims to tackle is the stabilisation and reform of the Sector Education and Training Authorities (SETAs), which have been beset with a range of governance and delivery challenges.

Manamela acknowledges that there is a need to change the way SETAs are run. “I think there is national consensus that SETAs, the way in which they are structured, the way in which they are governed and the way in which they provide services, require some level of reform,” he says, noting that “the conversation will have to be within various levels of government as well as with stakeholders such as labour, industry and training institutions”.

Manamela says he has taken note of those who are calling for SETAs to be shut down, while others are calling for them to be moved from the Department of Higher Education and Training, but notes that the conversation will need to be held between all stakeholders in the sector to map the way forward.

For now, he expects to finalise the boards and chairpersons of the SETAs and complete a process that was started by Nkabane but had to be halted due to a public outcry. The incoming boards will have to appoint new CEOs or renew the contracts of incumbents to execute the five-year strategy to 2030.

Manamela acknowledges that there are accommodation challenges at both TVET colleges and some universities. In TVET colleges, especially, the problem is compounded by the fact that students were paid money for accommodation directly but spent it on other items.

Manamela says the exam section of institutions is ready for the year-end cycle, and he hopes that results will be timeous and not hamper the start of the new year.

“There is an aura of stability, but it is not without its challenges,” Manamela says as he works towards a successful conclusion to his first year in charge.

“I think there is national consensus that SETAs, the way in which they are structured, the way in which they are governed and the way in which they provide services, require some level of reform.”

—
Buti Manamela

DG'S CORNER

I wish our NSC candidates the best of luck in the exams

MATHANZIMA MWELI

It has become customary that every year the DG of the Department of Basic Education and his team start a series of activities with school principals, district, provincial and national officials through the first phase of DG's Engagements, wherein the tone is set for the entire school calendar year.

These engagements culminate in face-to-face meetings with individual districts involving the entire district team going through the performance and plans for improving learning outcomes. These activities also involve an average of 10 to 15 schools per district with the intention of getting learners settled and focused on their studies by sharing techniques which are commonly known as the five "nuggets" as provided below:

1. Coming to school every day and being in class on time all the time. This is a cardinal universal principle that underpins every success in teaching and learning.
2. Pay attention to what the teachers are saying during every lesson and follow instructions.
3. Follow the personal study timetable from Monday to Sunday, studying at least two subjects a day for a minimum of six hours, which means three hours per subject. One hour should be used for reading, and two hours should be used to answer questions from previous question papers based on the topic/topics that they have been reading/studying about (this is called practice, and practice makes perfect)
4. Use the materials that learners have to study and prepare every day: (i) Notes taken during the lessons; (ii) Textbooks & Study Guides; (iii) Handouts given by teachers; (iv) Previous Question Papers & Memoranda/Memorandums (Practice at least with the previous question papers of the last five years before writing the final year exams); (v) Digital materials (e.g. YouTube videos; Telematic Programme; and DBE website — search for 2nd Chance Matric programme).
5. Be your brother/sister's keeper: (a) Take care of each other; (b) Support

one another; (c) Teach each other; (d) Learn from one another; (e) Instil discipline within yourself and among yourselves.

The last but one major activity is the DG's second phase of provincial engagements, which determines the state of readiness for rounding off the current school calendar year, internal and external examinations, as well as commencement with the new (2026) school calendar year, which involves national, provincial and district officials. During these meetings, the following topics were covered:

1. Tracking Learner Performance from grade R - 12 in 2025.
2. Early Childhood Development
3. Foundational Learning (Numeracy and Literacy)
4. MTBBE
5. Progress and Challenges on the Expansion of Focus Schools
6. Rural Education
7. State of Readiness on the Internal and External Examinations
8. State of Readiness for 2026 Academic Year
9. Progress and Challenges in the support for newly qualified employed Educators

10. Progress and Challenges regarding the recruitment of young people to study teaching (Bachelor of Education: Foundation Phase), as well as issues in Grade R
11. Progress and challenges of Basic Education Employment Initiative (BEEI)

The outcomes of these engagements indicate that provincial education departments have covered the curriculum in 2025 and are cautiously optimistic about the improvement of learning outcomes, and are ready for the 2026 reopening of schools.

The last activity was a virtual meeting convened on Wednesday, 15 October 2025, with all officials in the country involved with the administration of the National Senior Certificate. The 2025 National Senior Certificate examination will bring together an estimated 80,000 invigilators, 3,000 examination officials, and 55,000 markers to support the 903,561 learners who will write this examination.

During this meeting, I highlighted the following ten cardinal points:

1. Let's rally together as a team: No single individual can make the 2025 NSC examinations successful. We are going to hold each other's hands and get to the finishing line together.

2. Keep your eyes open: There are always negative elements out there that are bent on compromising the examination. Inform your supervisors of any lingering concerns that may be in your environment.
3. Zero Printing Errors: All question papers must be printed accurately, quality assured thoroughly and produced in line with the Standard Operating Procedures. There can be no room for error.
4. Secure and Compliant Storage: All question papers must be stored strictly in accordance with the Standard Operating Procedures. Security and confidentiality are paramount.
5. Accurate Packing and Reliable Distribution: The packing of question papers must be meticulous, and their distribution must be timely and secure to prevent any compromise.
6. Strict Adherence to Norm Times: Chief invigilators, examination heads, and district officials must adhere to the established norm times for the collection and return of question papers and answer scripts.
7. Effective Monitoring: Dis-

trict Directors and Heads of Examinations must ensure that at least 70% monitoring coverage is achieved. Monitoring is not optional; it is an assurance of credibility.

8. Upholding the Integrity of the Examinations: All examination officials, invigilators, markers, and monitors must act with the highest ethical standards. Irregularities must be prevented and, where detected, reported immediately.
9. Responsible and Vigilant Invigilation: Invigilators and chief invigilators must conduct their duties with vigilance, fairness and professionalism. They are the first line of defence against irregularities and must maintain integrity in every examination venue.
10. Integrity of Marking: The marking process must uphold the highest standards of objectivity and accuracy. Markers, internal moderators, and marking centre managers must ensure that every script is treated with fairness, that marking guidelines are applied consistently, and that quality assurance measures are rigorously followed.

Colleagues, these ten points are not just procedural requirements; they are the pillars upon which the credibility of the National Senior Certificate stands. As we approach the start of the examinations, I urge all senior managers to ensure that sufficient staff continue with their services relating to oversight of the internal examinations and assessment, managing the end-of-year reporting processes and preparing for the opening of schools in 2026, while the integrity of the examinations is secured. We must never compromise the Department's operational continuity.

Let us go into this examination season with renewed determination, guided by discipline, collaboration, and integrity. Our learners have worked hard for this moment. It is our collective duty to provide them with an environment that is secure, fair, and conducive to their success.

Aristotle said, 'Excellence is never an accident; it is always the result of high intention, sincere effort, and intelligent execution.'

Mathanzima Mveli is the Director-General of the Department of Basic Education



Commitment: DG Mathanzima Mveli visited all 75 districts in the lead-up to the NSC exams to ensure that the Last Push activities were in place as part of the Learner Support Programme

- Photo: Eddie Mtsweni.

SKILLING MZANSI — ADVERTORIAL

Mpho Mookapele's passion for skills development

THAPELO MOLEFE

As our team settles into her offices in Parktown, Johannesburg, Mpho Mookapele, the Energy and Water Sector Education and Training Authority (EWSETA) skills development leader, leans forward, eyes bright, and declares that education lies at the heart of solving South Africa's toughest challenges in energy and water.

Her colleagues describe Mookapele, a chartered accountant who has herself benefitted from the SETA system, as "visionary, authentic, and resourceful," a leader with conviction and purpose who inspires through both words and action.

"She is rewriting the rules of leadership with warmth, vision, and a deep commitment to human connection," one colleague quipped.

Indeed, when we meet, Mookapele radiates a mix of urgency and optimism.

She wastes no time, urging those in Grade 12 to consider careers in energy and water as they prepare for their final matric exams.

For her, these are not just critical sectors; they are the bedrock of the nation's future.

"Our role is to build human capability for South Africa," she says. "That means giving young people access, making education relevant to industry, and ensuring that transformation is more than just a statistic."

With the Class of 2025 entering exam season, Mookapele is calling on learners to explore pathways in renewable energy, water management, hydrogen technology, energy efficiency, and township entrepreneurship — fields offering real opportunities beyond oversubscribed university courses.

Central to EWSETA's mission is restoring confidence in Technical and Vocational Education and Training (TVET) colleges.

Two years ago, the Department of Higher Education and Training aimed to have just over 3 million students enrolled in public TVET colleges by 2030. That means making the public college system a first-choice option for technical and

occupational qualifications that are driving the South African economy

"We've made universities the only option for matriculants, and that shouldn't be the case," Mookapele insists. "There are great opportunities in universities of technology and in TVET colleges. Our priority is to bring back confidence and attractiveness to public colleges."

EWSETA has partnered with more than 30 TVET colleges, modernising curricula, upgrading facilities, and providing lecturers with training and international practical exposure that is aligned to new technologies and rapidly changing industry demands

International partnerships with China, Germany, Italy, the UK and the US have brought advanced solar power and wind power training equipment to local colleges, while giving lecturers valuable global exposure.

One such initiative that Mookapele is particularly excited about is the recent partnership between EWSETA and the Chinese Culture and International Education Exchange Centre, where 45 TVET college learners from across the country and 2 lecturers from Vhembe TVET College were part of a Renewable Energy Internship Programme in China for 12 months. Now back in South Africa, the lecturers are capacitated to deliver a new QCTO-aligned renewable energy curriculum in the newly established Renewable Energy Training Centre at Vhembe TVET College, funded by EWSETA.

"We must get to a point where we mimic the German dual-system model," Mookapele says, "where industry drives training through TVET colleges. Students should be able to seamlessly integrate into the workplace, completing industry-aligned and relevant qualifications while employed, giving them the benefit of both theoretical and practical application simultaneously, coupled with job security."

This vision of closing the industry and post-school education gap is one that Mookapele and her team are driving relentlessly through strategic partnerships with energy and water employers.

Projects with Sasol and New Age Engineering retrained unemployed



Visionary: Mpho Mookapele's colleagues describe her as a leader with conviction and purpose who inspires through both words and action. - Photo: Eddie Mtsweni.

graduates in welding and engineering, leading to placements at Koeberg nuclear station and Mpumalanga power plants.

A German Society for International Cooperation (GIZ)-backed programme in energy efficiency auditing saw more than 90% of its graduates secure permanent jobs.

"These are real outcomes," Mookapele says. "We don't want education that leaves people with certificates but no work opportunities. Education must open doors to employment and entrepreneurship."

EWSETA is also equipping South Africans for industries of the future.

In partnership with the University of Pretoria, Sasol, and UK PACT

have spurred innovations to tackle municipal water challenges, while CSIR-supported incubators are helping black-owned SMMEs break into renewable energy.

Mookapele is also clear that EWSETA is mandated to ensure skills development is aligned to the energy mix as articulated in the country's Integrated Resource Plan and that nuclear skills cannot be overlooked. "Nuclear skills in South Africa are the same nuclear skills required in the United Arab Emirates right now," Mookapele notes. "It's about positioning our people for opportunities both at home and abroad."

For Mookapele, future skills are not only about cutting-edge science.

"In every household, there's an iron, a microwave, a fridge. When they break, somebody needs to fix them. These are real needs that create economic opportunities," she says.

EWSETA is also steering South Africa's role in the G20 clean-cooking agenda.

Piloted in Mpumalanga, the G20 Clean Cooking Legacy programme initiative will train LPG practitioners to access the full value chain of clean cooking, from creating "last mile" business opportunities through LPG refill outlets run by communities to the installation of safe cooking facilities in schools for safe and energy-efficient food production at scale.

"The harsh reality we face is that far too many people die from cooking with fossil fuels in their homes. Women and girls put their lives at risk every day just from needing to leave the safety of their homes to collect firewood. Clean cooking is about saving and protecting our most vulnerable members of society, ensuring safety, and creating value chains for young entrepreneurs," she says.

Transformation runs through EWSETA's DNA.

More than half of its project ben-

eficiaries are women, with female leaders in the energy and water sector receiving dedicated support through specially curated middle management and executive management development programmes with reputable implementing partners like the Wits Business School and Duke Corporate Education.

Eskom, EWSETA's largest levy-paying employer, has been a recipient of such a programme, which saw more than 100 women across middle management and executive management capacitated to take their rightful places in a traditionally male-dominated sector.

It is perhaps Mookapele's own career journey as a young black woman with a determination to make her mark that has propelled EWSETA's support towards changing the sector's gender demographic.

Mookapele comes from a humble background, having been raised by working parents in a rural area. Not one to have ever settled for anything but excellence, even at a young age, she matriculated at the top of her class and, through her determination to get a good qualification, secured a SETA learnership in accounting, leading to her qualifying as a chartered accountant.

As a product of rural education and the limited access to career guidance support received by learners in rural schools, Mookapele has ensured that career guidance for rural youth is another priority for EWSETA. Its digital career guidance tools, Rural2Rural Career Roadshows and the launch of innovative and exciting initiatives like the EWSETA/DUT EnergyDrive Truck, a mobile classroom showcasing renewable technologies, have been taken directly to schools nationwide.

"Young people cannot aspire to careers they've never seen," Mookapele says. "We must show them what is possible and ignite their curiosity."

"The world is ageing, but Africa is young," Mookapele reflects. "If we empower our youth with the right skills, they can compete globally while driving transformation at home."

For Mookapele, the measure of success is not short-term numbers but systems that endure.

"My legacy is not about counting how many people qualified under my leadership. It's about building a machine that still works tomorrow ... an ecosystem that functions."

Over the next five years, EWSETA plans to expand digital career guidance in schools, build capacity in energy storage, transmission, and water infrastructure, and deepen transformation in ownership and leadership within the sector.

As South Africa's learners prepare for their exams, Mpho Mookapele's message is clear: the energy and water sectors are not only where the jobs are, but where the country's future will be built.

"Our role is to build human capability for South Africa. That means giving young people access, making education relevant to industry, and ensuring that transformation is more than just a statistic."

—
Mpho Mookapele

(Partnering for Accelerated Climate Transitions), it developed Africa's first hydrogen fuel cell technician qualification, positioning local graduates for the global hydrogen economy.

At the University of Venda in Limpopo, graduates turned biogas research into a cooperative producing affordable cooking gas from food waste and cattle dung.

Hackathons on water technology

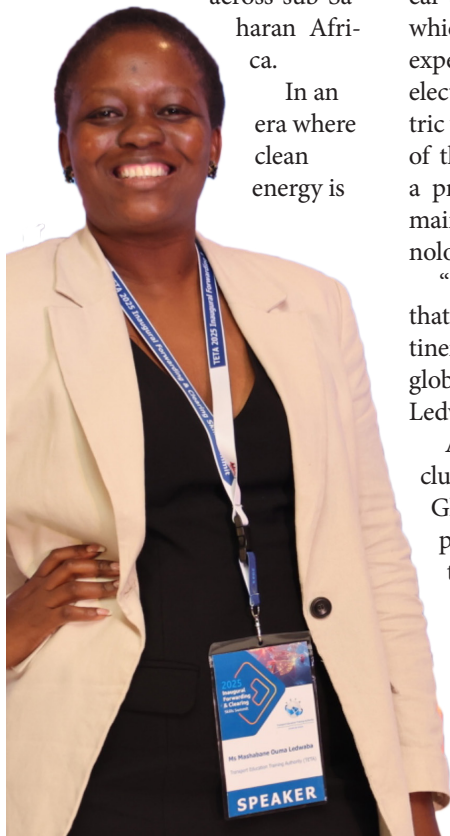
SKILLING MZANZI — ADVERTORIAL

TETA and Stellenbosch University drive skills development for youth in electric vehicle mobility

THAPELO MOLEFE

The Transport Education and Training Authority (TETA), in partnership with Stellenbosch University, is steering a flagship programme aimed at developing skills for electric vehicle mobility in South Africa and across sub-Saharan Africa.

In an era where clean energy is



reshaping industries and economies, this initiative is positioning the country at the forefront of a transport revolution, one that is greener, smarter, and driven by local innovation.

According to TETA's Research and Knowledge Manager, Mashabane Ledwaba, the programme addresses a major gap in technical training institutions, many of which still lack the resources and expertise to provide hands-on electric vehicle education. As electric vehicles begin to occupy more of the world's roads, Africa faces a pressing question — who will maintain and innovate the technology that drives them?

"This project is about ensuring that South Africa and the continent are not left behind as the global transport sector evolves," Ledwaba said.

As more African countries, including South Africa, Kenya, and Ghana, adopt cleaner transport policies, the demand for skilled technicians continues to grow.

TETA and Stellenbosch University have identified

this as both a challenge and an opportunity to empower the next generation of technicians, engineers, and innovators capable of leading the electric mobility transition.

The programme is being implemented in two phases. The first focuses on research and stakeholder engagement to determine the specific skills needed in the electric mobility ecosystem.

Researchers are engaging with government departments, industry leaders, and training institutions through surveys and interviews. The data collected is analysed and published to guide the second phase of the project, turning research into practical action.

Phase two will see the development of a modular short learning programme and the rollout of a hands-on electric vehicle training platform.

The platform, which has already been built, features a mounted electric vehicle with functional motors, sensors, and diagnostic tools. Inside the lab, trainees can



- Photo: Vecteezy.com

test components, trace electrical systems, and simulate real maintenance scenarios, an experience many say brings the theory of electric mobility to life.

"What makes this initiative a flagship programme at Stellenbosch University is its combination of research and practical training," Ledwaba said.

"It contributes to academic knowledge while offering real solutions to skills shortages in the transport and energy sectors."

Stellenbosch University provides the academic and technical support for the project. Its researchers and lecturers are responsible for developing the curriculum, the training platform, and the research framework.

The university also provides access to laboratories, workshops, and technical expertise to ensure that the programme meets both academic and industry standards.

The partnership benefits both institutions. For TETA, it supports the organisation's goal of advancing skills development in the transport sector. For Stellenbosch University, it strengthens its role in national development by applying research to real challenges in the economy.

"This collaboration shows how universities and public entities can work together to prepare South Africa for the future of transport," Ledwaba said.

Although the programme is still in its first phase, it is already setting the foundation for student growth.

The electric vehicle training platform offers learners a space to interact directly with vehicle components, practice diagnostics, and understand how electric systems function. Once the short learning programme is launched, students from universities, TVET colleges, and the automotive industry will benefit from research-based instruction combined with hands-on training.

Support systems, including mentorship opportunities and collaboration with automotive companies, are also being developed to ensure that students gain valuable experience and connections.

"We are building a system that does more than teach theory. It prepares young people for jobs and entrepreneurship in the growing electric vehicle industry," Ledwaba said.

Keorapetse Malohle:
The sky is her playground

AKANI NKUNA

Hailing from KwaThema, near Springs in Gauteng, and raised by a single mother, Keorapetse Malohle's professional journey epitomises defying the odds, perseverance, discipline and passion.

Malohle wanted to be a pilot from a young age, but eventually gravitated towards the idea of aircraft mechanics, which she said would still allow her to work within the aviation field.

After graduating from high school, she enrolled in a Transport Education and Training Authority (TETA) programme, marking the beginning of her aviation journey.

"TETA opens doors, especially for young people from underprivileged backgrounds. Without it, I don't know where I'd be," she said.

Malohle describes working as an aircraft maintenance technician as a calling, given her love of working with her hands. She commended the TETA programme for providing her with more than work experience, saying that it helped instil discipline and responsibility, which are essential to her daily work.

She said the TETA training was a transformative experience. It was led by "dedicated instructors," she said, and senior engineers, who not only taught her how to fix aircraft but also how to be a better person.

TETA's learning environment is immersive, she said, incorporating the study of various aircraft and engineering components to bring theory to life.

Among the many valuable lessons gained during her training, Malohle highlights the importance of hand skills, time management, and meticulous housekeeping.

More than that, the mindset of treating every task, no matter how small, as critical has stayed with her. "Someone's life depends on the work we do. There are no shortcuts," she said.

Malohle said that the programme's impact on her career has been profound.

It has boosted her confidence as



Sky's the limit: Aircraft maintenance technician Keorapetse Malohle says: "TETA opens doors, especially for young people from underprivileged backgrounds. Without it, I don't know where I'd be."

a mechanic and has also broadened her vision for the future.

She said that the programme has enabled her to gain valuable exposure to industry professionals who are facilitating her ambitions of becoming a pilot and a Civil Aviation Authority inspector.

Malohle hopes her technical

background in aviation will help her reach this goal.

She said that with commitment, the sky is not the limit; instead, it is her playground.

"Never accept the limitations placed on you. I have a heart for aviation, because lives depend on what we do."

SKILLING MZANZI — ADVERTORIAL

Leetoane Lillian Sefuthi: Breaking barriers in aviation

LEVY MASITENG

Leetoane Lillian Sefuthi, an aircraft mechanic employed at Milkor, has defied convention to pursue a career in a male-dominated industry.

With the support of the Transport Education & Training Authority (TETA) programme, Sefuthi has not only found her true calling but is paving the way for other women to join the aviation industry.

Her journey began in high school, where she developed a passion for engineering, studying me-

chanical technology from grade 10 to matric.

Despite being “clueless” about aviation, she pursued further studies in mechanical engineering at Motheo TVET College.

During her college days, she was introduced to the TETA programme, which changed her life trajectory.

The TETA programme equipped Sefuthi with the technical skills and confidence she needed to excel in the aviation industry, she said.

She underwent training at 43

Air School in Port Alfred and later at Denel in Kempton Park, where she gained hands-on experience in aircraft maintenance.

Sefuthi said that TETA introduced her to something that she never knew existed. “We got to work and experience things that I never thought I would do in life, so it gave me the opportunity to explore more, to explore more about being a mechanic.”

Her determination and hard work paid off when she completed her training and became a qualified aircraft mechanic in October last year.



Ambitious: Lillian Sefuthi aims to become a certified aviation engineer and is studying to meet this goal.

As a woman in a male-dominated field, she is passionate about encouraging other women to follow in her footsteps.

“In aviation, women do everything.”

Her message to young South Africans considering a career in aviation maintenance or mechanical engineering is clear: “Never doubt yourselves. If we did it, if we managed and we did it, and we are still doing it today, nothing can stop them.”

Sefuthi’s career goals are ambitious. She aims to become a certified engineer and is currently studying to meet this goal. With her sights set on the future, she is determined to add to the small number of certified female aircraft mechanic engineers in South Africa.

“Being a mechanic, it’s not only about fixing cars, repairing some things. No, being a mechanic, it’s something huge, and TETA showed me that.”

From Botshabelo to the skies: The inspiring journey of Tatello Tlebere

THAPELO MOLEFE

Growing up in the vibrant township of Botshabelo in the Free State, Tatello Tlebere never imagined he would one day be working on real aircraft.

His journey began at Seemahale Secondary School, where he completed his matric before deciding to pursue a career that combines his love for aviation, his passion for problem-solving, and his fascination with complex machinery.

“Becoming an aircraft mechanic appealed to me because it’s rare, challenging, and exciting. I just said, Why not?” he recalls.

Before joining the Transport Education and Training Authority

(TETA) training programme, Tlebere was studying electrical engineering. However, after struggling to find job opportunities in the field, he decided to take a bold step toward aviation.

“I couldn’t just afford to sit at home and do nothing,” he says. “TETA came at the right time; it was a great opportunity for me.”

TETA provided him with everything he needed to succeed, he says, from financial support and study materials to an intensive training programme that included 11 months of theory and 18 months of practical experience.

“It prepared me to be more technical and confident enough to work on a live aircraft,” he says.

Tlebere also appreciated the sti-

pend provided, which allowed him to survive while moving from one province to another for his training.

Like many trainees, Tlebere started with little to no technical experience.

“I didn’t even know how to swing a spanner or the difference between a spanner and a socket wrench,” he admits with a smile.

“But I had the best instructors; they supported me not just educationally but also emotionally and psychologically.”

Throughout his training, Tlebere learnt key principles that now shape his daily work — housekeeping, safety, and discipline.

“These are things I use every day, whether I’m at work or at home,” he says.

His confidence has since soared, and today he can be trusted to work independently on aircraft.

“I’ve earned respect and dignity in my work. Integrity means doing the right thing even when no one is watching,” he adds proudly.

Tlebere believes the TETA programme is transforming lives, especially for young South Africans from disadvantaged backgrounds.

“These programmes are vital because they open doors for those whose parents cannot afford rare skills training. Many of us didn’t even know about aviation before TETA; now we’re part of it.”

Looking ahead, Tlebere is determined to continue growing within the aviation industry.

“I want to become type-rated in



Soaring career: Tatello Tlebere says TETA provided him with everything he needed to succeed, from financial support and study materials to an intensive training programme.

different aircraft and maybe one day specialise or become an aviation analyst,” he says.

His message to young South Africans is clear: “Let’s stop limiting ourselves. If you believe you can, anything is possible. Aircraft are made by humans, we make them fly, and it’s truly fascinating to be part of that.”

Nikelo William: Rising from Botshabelo to build a future in aviation

THAPELO MOLEFE

Born and raised in Botshabelo, a township in the Free State, Nikelo William has always believed in hard work, discipline, and personal growth.

His aviation journey began unexpectedly during his apprenticeship, where his exposure to experienced aircraft technicians sparked a lasting fascination with aviation engineering.

“That’s where everything started,” he recalls, reflecting on how his passion for the skies took root.

Before enrolling in the Transport Education and Training Authority (TETA) programme, Nikelo spent almost four years working as a cashier at a Shell filling station.

While the job provided stability, he yearned for more, something that challenged him intellectually and technically.

“I decided to develop and better myself,” he says, describing his decision to leave a familiar environment in pursuit of a dream that promised both growth and fulfilment.

Joining TETA proved to be a defining step in his career. The programme equipped him with essential technical knowledge and practical experience, particularly in aircraft maintenance and troubleshooting.

“TETA prepared me to be skilful and technical when it comes to tools and aircraft,” Nikelo said.

He speaks with particular fondness about the on-the-job training component, which he describes

as the most rewarding part of his learning journey.

“I enjoyed maintenance work more than being in the classroom — it made me feel part of something real.”

The learning environment at TETA, according to Nikelo, was both supportive and inspiring. The instructors were approachable and dedicated, ensuring that every student — no matter their level — received individual attention.

“We were not many students, so the instructors could focus on both our strong and weak points,” he recalls.

This nurturing atmosphere helped him build confidence and refine his mechanical skills. Today, Nikelo stands as a confident and responsible aircraft mechanic, proud

of the transformation he underwent through TETA. His colleagues trust him with greater responsibilities, recognising the professionalism and reliability he brings to his work.

“Safety, teamwork, and problem-solving are now second nature to me,” he says, emphasising the life-changing impact of the programme.

To aspiring technicians, his message is clear and encouraging: “Don’t be afraid. Aviation is one of the most enjoyable and fulfilling careers you’ll ever be part of.”

He believes that initiatives like TETA not only empower young people but also help address South Africa’s unemployment challenges.

Looking to the future, Nikelo’s ambitions soar high — he dreams of becoming a licensed aircraft me-



Aiming high: Nikelo William is full of praise for the TETA training he received to become a qualified aircraft mechanic and says he wants to keep learning and improving every day.

chanic, specialising in Boeing and Airbus aircraft.

“I want to keep learning and improving every day, to become the best mechanic that TETA has ever produced,” he says proudly.

HIGHER EDUCATION & TRAINING

Dube-Ncube's bold push for SA's youth to acquire the skills they need to grow and thrive

JOHNATHAN PAOLI

Since her appointment as Higher Education and Training Deputy Minister, Dr Nomusa Dube-Ncube has hit the ground running, launching initiatives from rural TVET expansions to student funding reforms.

Her latest project, a hospitality internship programme in partnership with industry and academia, underscores her commitment to youth empowerment, economic inclusion and transforming South Africa's post-school education landscape.

"This is about producing chefs, creators, innovators and entrepreneurs. It is about building careers, not just filling jobs. Collaboration between government, business and academia shows South Africa and the world that we can change lives together," Dube-Ncube said.

The programme, developed in partnership with Diageo South Africa, the University of Johannesburg's School of Tourism and Hospitality, and the Youth Employment Service, is designed to open pathways into the hospitality industry for young South Africans.

It combines training, internships, and business development opportunities with the promise that beneficiaries will not only become employees but also future employers.

Since the beginning of her term earlier this year, following President Cyril Ramaphosa's Cabinet reshuffle, Dube-Ncube has consistently signalled that her tenure will be marked by action-oriented initiatives targeting the most pressing issue in higher education, namely youth unemployment.

South Africa's jobless rate remains the highest among the youth, with many graduates unable to find work despite having qualifications.

The hospitality and tourism sector, which contributes nearly 4% to GDP, is a case in point.

It is fast-growing yet plagued by slow transformation, with disadvantaged young people often stuck in entry-level positions without mobility.

Dube-Ncube acknowledged these barriers at the launch, pointing out that building a skilled chef or hotel manager takes "more than a job, it requires education, mentorship and opportunity".

Her message aligns with the government's long-standing skills development strategy, anchored in



Action-oriented: Higher Education and Training Deputy Minister, Dr Nomusa Dube-Ncube, at the launch of the internship programme for youth in the hospitality sector at the University of Johannesburg. - Photo: DHET.

the Sector Education and Training Authorities (SETAs).

She highlighted the work of the Culture, Arts, Tourism, Hospitality, and Sport Sector Education and Training Authority, which in May celebrated the graduation of 164 learners from the Occupational Chef Qualification Programme.

"That milestone reflects progress, but it also tells us we must do even more," she said.

In her first six months as deputy minister, Dube-Ncube has made it clear she does not intend to be a ceremonial figure.

Instead, she has embarked on a whirlwind of engagements and initiatives across the country.

In late August, she presided over the handover of the Aliwal North Engineering Campus at Ikhala TVET College, a milestone that expanded access to technical education for rural youth.

Soon after, she joined the Wholesale and Retail SETA to launch the Ntabankulu Agricultural Campus in the Eastern Cape, aimed at blending education with sustainable economic opportunities in farming communities.

She has also been visible on student platforms.

At the Mandela-Sobukwe Leadership Camp in September, she engaged directly with student leaders on challenges facing young people today, from mental health to employability.

She stressed the importance of soft skills such as empathy, teamwork and digital literacy, tying them to the Higher Education and Training Department's Health's Civic and Soft Skills Programme.

"Academic qualifications alone are no longer enough. We need to shape well-rounded leaders," she told participants.

At the University of Pretoria's Mamelodi campus, she unveiled a live National Student Financial Aid Scheme (NSFAS) step-by-step application programme, designed to simplify the funding process for students who often face barriers in navigating bureaucracy.

By promoting transparency and accessibility, the initiative aimed to ease the frustration that has long plagued NSFAS.

Her attendance at the Standard Bank Top Women Conference underlined her commitment to gender transformation, while her courtesy meeting with the Czech ambassador highlighted her role in strengthening South Africa's higher education diplomacy.

While the hospitality internship launch marks another headline achievement, Dube-Ncube is already looking ahead to systemic reforms.

She has set out five priorities for the government's approach to skills development in the sector: expanding access through training

hubs in townships and rural areas; simplifying processes so that talented youth are not excluded by digital divides or complex applications; guaranteeing opportunities by linking training to reputable internships and apprenticeships; supporting entrepreneurship with seed funding, mentorship and business incubation; and tracking outcomes to measure real impact and replicate what works.

"This is how we will ensure today's beneficiaries are not just employees but become employers, innovators and leaders," she said.

Dube-Ncube's activism in the higher education portfolio also marks an impressive political comeback.

Once written off after being relegated to the ANC's provincial list in KwaZulu-Natal, she has returned to the national stage with renewed purpose.

Her appointment as deputy minister followed years of experience as KwaZulu-Natal's first female premier and as MEC in multiple portfolios.

Her political journey has not been without turbulence, including public clashes with provincial leadership and questions about her marginalisation.

Yet her new role has given her the space to reassert her capacity for governance and delivery.

Women's organisations, including the ANC Women's League, have

long championed her as a symbol of resilience in a male-dominated political landscape.

Her active participation in community-level events, from student bake-offs to leadership workshops, reflects a leadership style rooted in accessibility and empathy.

For Dube-Ncube, the hospitality internship programme is not an isolated intervention but part of a broader vision for a transformed higher education and training sector. She frames it as nation-building work: addressing inequality, driving inclusion, and equipping the next generation with tools to thrive.

"We cannot yield the full potential of our tourism and hospitality sector while so many remain excluded. Learning for Life is about economic inclusion and transformation; it is about South Africa's future," she said.

As she settles into her national role, Dube-Ncube's record suggests she is determined to leave a legacy of practical achievements.

From rural higher education expansion to streamlining student funding, from youth leadership camps to internships in hospitality, she is crafting an agenda defined by impact.

For thousands of young South Africans seeking pathways into education, work and entrepreneurship, that focus could not be more timely.

EDUCATION NEWS



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SKILLING MZANZI

Nkoane vows to put CETA back on track

Industry stakeholders have told Oupa Nkoane they would like to see the CETA working and delivering on its mandate

THEBE MABANGA

Oupa Nkoane, the newly appointed administrator for the Construction Education and Training Authority (CETA), has been encouraged by the reception he has received from various stakeholders as he sets about using the next 12 months to address governance challenges at the entity.

“The reception I have had is encouraging,” he says of the role that was announced at the beginning of August. “It tells me that they would like to see the CETA working and delivering on its mandate.”

Since being presented to staff in the second week of October, Nkoane has met the business community, starting with levy-paying companies and industry bodies. He notes that their common concern is to see “value for money” for the Skills Development Levies they pay.

Nkoane has also since met with organised labour, who he says have given him the freedom to address governance and labour relations concerns, some of which were initially pointed out by unions and escalated to the Department of Higher Education and Training.

He has also started meeting with Training and Vocational Education and Training (TVET) Colleges, which are critical stakeholders for producing the buy-in of the artisan skills that he would like to see CETA consistently deliver.

Nkoane says one of the attributes he brings to his role is that “he speaks the industry’s language” with a background that includes a master’s degree in Town and Regional Planning. Over the past two decades, he has held senior town planning roles in the metros of Tshwane and Ekurhuleni, and been head of housing at the City of Johannesburg. “Planning, structuring, and the development of projects is part of my DNA,” he says. “I love to see projects from conception to completion.” It is this meticulous attention to detail and execution that he would like to bring to his CETA role.

“The built environment and construction are key economic drivers,” he says, noting the opportunity this presents for employment and skills provision. For example, he says, the Gauteng provincial government and its agencies have a capital expenditure budget of R50 billion, which is for the creation of new assets and excludes maintenance.

“The most critical need for skills for the capital infrastructure programme is that it must be delivered within budget and on time,” he says. This requires a range of skills from planning to budgeting and procurement. Then there are quantity surveyors, architects and artisanal skills of bricklayers, painters, plumbers and general workers. It is these latter skills that he hopes to help supply to the country’s capital projects. “This will create a pool of competent, skilled artisans and create opportunity and upskill professionals.”

Nkoane says he would like CETA to create partnerships with credible funders in the form of state-owned enterprises such as Rand Water and the South African National Roads Agency Limited, which respectively spend billions of rand on water and road infrastructure, and he would like to see CETA supply skills to such projects.

Nkoane is clear about his role and mandate as an administrator. “The fact that the CETA is under administration means there are chronic governance and organisational issues,” he says, noting that his aim is “to create an organisation that works and performs its core mandate, is results-oriented and compliance-driven.”

Part of his brief is to fill in key roles, starting with the role of Chief Financial Officer and Company Secretary and later that of CEO and a review of the organisation structure and the appointment of a capable board he can hand over to.

After filling in key positions, Nkoane says his task is to “re-engineer business processes to change perceptions that Sector Education and Training Authorities are cash cows.” One of the key processes to re-engineer is



Experienced: CETA administrator Oupa Nkoane loves to see projects “from conception to completion”. - Photo: Eddie Mtsweni.



Building the future: Oupa Nkoane says CETA aims to create a pool of competent, skilled artisans, create opportunities and upskill professionals. - Photo: CETA

procurement, which at CETA has been constantly plagued by claims of being manipulated.

Nkoane notes that over the past few years, the Auditor-General has found more reasons for giving CETA a qualified audit finding. The grounds for qualifications now include irregular expenditure, material irregularity, and the management of discretionary grants, which are vital for producing artisans.

“We must fix that while attending to our core mandate,” he says, noting that his audit plan will be presented to Parliament in a few months. Nkoane says his next step is to tackle forensic, disciplinary and labour relations

matters, and to implement their recommendations as much as possible.

Nkoane believes in “large-scale, high-impact interventions” of producing artisans in large numbers. He says CETA must spend its time and money mainstreaming artisans and identifying, profiling and training learners to place them in capital projects. A key part of that process is identifying capable private sector training providers.

He believes that the organisation has an opportunity to demonstrate its strategic value to South Africa’s construction industry and the economy. This is in response to voices — like that

of the Centre for Development Enterprise — that believe SETAs must be closed.

Nkoane notes that CETA’s operating licence expires on March 30 in 2030. At that time, the government can choose to reconfigure SETAs. But he notes that the built environment and construction sector require a dedicated body that has the capacity, mandate and resources to continuously train people, whether it’s SETAs or another body.

He notes that CETA must demonstrate that it adds value to justify its continued existence. “If we do not get basics right, we cannot assume our role is permanent,” he says.

TEACHER'S CORNER

Thulani Sibiya is South Africa's best teacher

The Mpumalanga educator was crowned at the 2025 National Teaching Awards



Mpumalanga teacher Thulani Sibiya, congratulated by Basic Education Minister Siviwe Gwarube, received the 2025 National Best Teacher Award at the 2025 National Teaching Awards. - Photo: Eddie Mtsweni

AKANI NKUNA

Thulani Sibiya, Deputy Principal of Sophungane Combined School in the Nkomazi local municipality, was named the overall winner in the prestigious National Best Teacher category, earning recognition for his dedication to academic excellence and his passion for shaping future doctors, engineers, and pilots.

A committed science and mathematics educator in the Ehlanzeni District, Sibiya teaches Grade 12 learners and is known for his guiding philosophy that “background does not define a man, but mental attitude does.”

He said he is driven by the belief that one’s background does not determine destiny, attitude does — a principle that motivates him to push learners to aim high and contribute meaningfully to South Africa’s growth.

Following his crowning, Sibiya told Inside Education that he was elated by the national recognition of his lifelong efforts.

“I am so excited. This belongs to the whole province of Mpumalanga, and I’m really proud to be their pride. It means so much that our province produced the best of the best educators in the country.”

Sibiya expressed gratitude to his support systems, including the staff at Sophungane Combined School, where he currently teaches, and Shinyukane Secondary School, where his teaching journey began.

With seven years of classroom experience, Sibiya has inspired learners to pursue ambitious careers, particularly in the fields of medicine, engineering, and aviation.

The Mpumalanga Department of Education praised his achievement, describing him as “a shining star whose work demonstrates the transformative power of dedicated teaching” and commended his contribution to the sector, calling him “a beacon of hope and excellence.”

“Mr Sibiya’s mission is clear — to nurture future professionals such as doctors, engineers,

and pilots who will contribute to South Africa’s growth and prosperity,” the Department said.

“We salute his dedication, resilience, and outstanding contribution to education. He embodies the spirit of excellence that propels our nation forward.”

Mpumalanga Premier Mandela Ndlovu said Sibiya’s win placed the province firmly on the national stage of teaching excellence.

“Well done, Mr Sibiya. You are our shining star. Congratulations on this achievement, and good luck with the national edition,” he said.

Speaking at the 25th National Teaching Awards ceremony held at the Birchwood Hotel in Boksburg, Basic Education Minister Siviwe Gwarube said consultations were underway with the relevant council to reassign certain administrative duties to teaching assistants and school administrative staff.

“Too often, teachers’ time is consumed by non-instructional administrative tasks that divert energy away from teach-

ing. Reducing non-instructional admin is not about lowering accountability — it’s about respecting teachers as professionals and giving them back the time to teach,” she said.

The Minister emphasised the need to streamline reporting systems and remove “low-value” tasks while promoting the use of technology to improve efficiency and reduce disruptions.

She also underscored the importance of strengthening foundational education, particularly literacy and numeracy, announcing that the government plans to expand Early Childhood Development (ECD) programmes.

Gwarube said the department aims to register 10,000 ECD centres by 31 December 2025, after findings from the Thrive by Five Index revealed that children excluded from early education “fell behind in their cognitive and physical development.”

“We are moving decisively on compulsory Grade R. Provinces are doing what they can with

the resources available, while we work with National Treasury to secure additional funding to roll out Grade R to all learners who require it,” Gwarube added.

During the ceremony, the Western Cape emerged as the top-performing province, securing four Excellence Awards in the categories of Special Needs Teaching, Life Skills (Grades 1–6), the My Teacher Ministerial Special Award, and Excellence in Teaching Physical Sciences.

Limpopo ranked second, winning three awards, including Excellence in Teaching Mathematics, Excellence in Secondary School Teaching, and Excellence in Grade R Teaching.

KwaZulu-Natal, Gauteng, Northern Cape, and Mpumalanga each secured one first-place position, while the Eastern Cape was the only province without a top-spot winner.

The evening also honoured veteran educator Motseki Mofokeng from the Free State, who received the Kader Asmal Lifetime Achievement Award for over three decades of dedicated service to education.

OPINION

Lessons for SA from a study visit in China

The Chinese offer valuable insights on how South Africa can reimagine our innovation hubs as powerful engines to support economic growth and prosperity

MASHUPYE H MASERUMULE

Spending time in China was truly a wonderful experience, allowing me to see firsthand how this nation of hard-working and dedicated people has transformed into one of the world's leading economies.

Its history clearly demonstrates that its success mainly comes from resilience and a strong focus on science, technology, and innovation — these closely linked processes foster development by tackling humanity's complex challenges.

It's no surprise that China sees them as ongoing efforts to find solutions that genuinely support its development goals. Its post-school education system has been reimagined to play a much bigger and more meaningful role in society. A key part of this progress is its university system, which has grown significantly over the past 75 years, focusing on practical and valuable learning, complemented by strategic partnerships with vital sectors of the economy.

Beijing Jiaotong University, which hosted my study sojourn, is a prime example of how nurturing strategic collaborations can significantly enhance the capabilities essential for economic growth and development. Supported by the Ministry of Education, this university collaborates closely with notable partners, including China Railway Corporation and the Beijing Municipal Government, to enhance its research and academic capabilities.

This collaboration is vital for generating valuable knowledge. The Collaborative Innovation Centre for Rail Transit Safety, one of the first 14 centres approved by the Chinese government for the 2011 national projects, exemplifies how collaboration can boost the nation's innovative capacity — a valuable lesson in building a sustainable government-industry-university ecosystem for growth and innovation.

Shenzhen and Zhongguancun are just examples of what this ecosystem can achieve. These are tech powerhouses formed through partnerships between universities and

research centres to strengthen China's innovation and manufacturing capacity. The Chinese government has spearheaded the development of these tech hubs, often referred to as the Chinese equivalent of Silicon Valley.

While much of my stay was spent in Beijing, I also had the opportunity to explore the vibrant cities of Shanghai and Kunming. I also enjoyed visiting several museums, where I learned about China's fascinating history of economic growth and development. It was truly inspiring to see how the country has blossomed into one of the world's leading economies, with its cities shining as bright symbols of progress and hope.

And yes, just to brag a bit, I reached the top of the Great Wall of China — Fortress 12. This incredible piece of architecture is a proud symbol of Chinese history, culture and resilience. Since 1987, the Great Wall of China has been recognised as a UNESCO World Heritage Site, built over centuries by various dynasties to safeguard the people from nomadic tribes. It really captures the resilience and spirit of the Chinese people.

Shanghai, apart from being China's economic gateway, has become a centre for science and innovation. This is a fascinating concept for reimagining cities, not only as centres for economic activity, but also as hubs for research and development. In Kunming, the lively capital of Yunnan Province in Southwest China, I found a city filled with warmth and charm that beautifully blends modern comforts with breathtaking natural scenery.

Known for its delightfully spring-like weather all year round, Kunming is affectionately called the 'City of Eternal Spring'. Its strategic location near Southeast Asian countries makes it an important transportation hub, with rail links to Vietnam and road connections to Myanmar and Laos.

Kunming's geographical location enhances its role as a bustling trading centre and a wonderful place for travellers to explore. The city exemplifies how embracing both



Shaping the future: Shanghai, apart from being China's economic gateway, has become a centre for science and innovation.
- Photo: Vecteezy.com.



Strategic: The Great Wall of China captures the resilience and spirit of the Chinese people.
- Photo: Vecteezy.com.



Impressed: Tshwane University of Technology Deputy Vice-Chancellor Prof. Mashupye H Maserumule.

modernity and natural beauty can boost economic growth, providing a compelling example for South Africa, with its stunning scenery and natural treasures.

My experiences learning in China have truly inspired me, especially seeing how science and innovation are vital drivers of economic growth and progress. I've shared this before, but it's worth highlighting again that innovation really thrives through dedicated research and development, especially when collaboration is wholeheartedly embraced. Thanks to its innovative collaboration centres, China has achieved remarkable milestones in its development journey. Its investment in research and development, which accounts

for 2.68% of its GDP, makes it the second-largest spender in this area. This reflects its strong commitment and visionary approach, which are essential parts of its strategy to lead in technology and innovation.

It gives the United States the shivers. For a nation leading in technology will also be the one that shapes the future of the global political economy; hence, the tech war between these countries. However, some suggest that on the technological front, China has already won.

It is also making great strides in other exciting areas of innovation. The goal is to have a space solar power station up and running by 2050, which is a thrilling milestone for the next quarter-century. Building on research showing that solar panels in space can catch significantly more sunlight than those on Earth, this project proposes using microwave beams to send energy down, offering a dependable and eco-friendly power source.

Small-scale experiments have already successfully tested this concept, and China is making impressive progress with this innovative approach — an inspiring development that could reshape the future of energy. At the core of China's success is science, technology and innovation. Harnessing these boosts a nation's capacity for innovation. This is an important lesson for South Africa.

With focused, strategic and re-

silient efforts, it can replicate some of China's successes, especially in Gauteng, which boasts five universities and various science councils, including the Centre for Scientific and Industrial Research (CSIR) and the National Research Foundation (NRF).

Building strong strategic partnerships among these institutions, with support from the Department of Higher Education and Training and the Department of Science, Technology and Innovation, can significantly boost South Africa's research and development efforts, tailored to meet the country's unique needs.

The cities of Tshwane and Johannesburg have the potential to become dynamic hubs for science and innovation, contributing to the country's economic growth and development. They could even rival Shanghai as top innovation hotspots, only if South Africa can harness its resources and discover new opportunities for growth, including creating its own tech hubs like Shenzhen and Zhongguancun.

Although South Africa has some innovation hubs, they are not yet as dynamic as those in China. I believe the Chinese offer valuable lessons on how we can reimagine our innovation hubs as powerful engines to support economic growth and prosperity.

Prof. Mashupye H Maserumule is the Deputy Vice-Chancellor of the Tshwane University of Technology.

OPINION

Our universities need a national conflict resolution service



Photo: Vecteezy.com

PIKOLOMZI QABA

The flames that devoured the University of Fort Hare's administration buildings last week did not just consume bricks and mortar.

Students who petrol bombed the university's main Alice Campus succeeded in incinerating R500 million worth of potential: exam results locked in filing cabinets, services that might have processed thousands of student queries, futures for a nation with 62.4 percent youth unemployment.

Four buildings in total have been reduced to ash. Students have been injured in clashes with security. The historic campus has been evacuated. And here is the uncomfortable question nobody wants to ask: what if we have normalised destruction as dialogue?

Vice-chancellor Sakhela Buhlungu declared that the destruction showed "much bigger issues, with a significant component of sponsored violence and criminality".

Student leader Asonle Magwaxaza countered that students were angry and "frustrated because they have been suppressed" by management.

Higher education minister Buti Manamela condemned "actions that rob future generations of learning opportunities and divert scarce resources from improving the quality of education".

Yet these statements, issued from different corners of the conflict, speak past one another, while the flames speak for everyone.

Fort Hare joins a grim tradition stretching back to 2015, when Fees Must Fall protests resulted in R787 million in damages across 13 universities. North-West University's Mafikeng campus alone suffered R198 million in losses after fires gutted key infrastructure. The University of Johannesburg watched its auditorium burn: R144 million gone. At the University of KwaZulu-Natal, R100 million up in smoke; at the University of the Western Cape, R68 million.

The pattern repeats itself with terrifying predictability: grievance, protest, escalation, fire, temporary closure, hollow promises, repeat.

Let us ask the difficult questions that make everyone squirm. To university leadership: When did you last conduct genuine mediation sessions with students before tensions reached a boiling point? Not public relations exercises, not token consultations, but real engagement using structured conflict resolution frameworks?

In a statement condemning the destruction, Parliament's Portfolio Committee on Higher Education proclaimed itself disturbed by "messages that university management has suspended elected student leaders and replaced them with their own appointed leaders". And the committee is right to feel that way. If the "messages" are true, what mediator approved this substitution of democratic representation with administrative fiat?

To students: if every aggrieved group torched buildings, would

there be anything left to fight for?

Lucia Matomane, the United Democratic Student Movement's Eastern Cape provincial chairperson, observed that "students have long raised concerns about governance failures, delayed or inconsistent [student representative council] elections, financial exclusions, and an institutional culture that too often treats them as subjects rather than partners in higher education."

But she is right that grievances, however legitimate, do not justify petrol bombs – and that "the destruction of property and endangerment of lives" drags back the "struggle for a just and

accountable university system".

Consider the mathematics of negligence. R500 million could fund full scholarships for approximately 3,000 students for one year. It could build state-of-the-art residences, laboratories or lecture halls. Instead, it is ash.

But the real tragedy arising from the mayhem is not just the physical damage. It is that we have accepted protest-to-destruction as standard operating procedure. While Fort Hare burns, all stakeholders issue statements without addressing why mediation failed – or, more accurately, why it was never seriously attempted.

So, to the government: why does higher education lack anything comparable to the Commission for Conciliation, Mediation and Arbitration (CCMA), which handles workplace disputes with systematic protocols?

The Labour Relations Act provides clear escalation pathways: consultation, mediation by third parties, conciliation before arbitration. These are not perfect, but they prevent most conflicts from becoming violent. Why have we not adapted this for campus conflicts?

The CCMA model demonstrates that binding mediation works when all parties face consequences for refusing to engage. What consequences exist for university administrators who dismiss student concerns until buildings burn? What accountability do student leaders face for encouraging actions that destroy the very infrastructure they need?

Minister Manamela implored "all students and stakeholders to refrain from violence, intimidation, and damage to property" and to help "protect the University of Fort Hare's proud legacy through dialogue, discipline, and collective responsibility".

But dialogue requires infrastructure. It requires all stakeholders to sit in uncomfortable rooms with trained, independent mediators authorised to enforce agreements.

Fort Hare's flames illuminate a choice. We can continue this cycle of frustration-fuelled destruction, with each generation of students inheriting damaged campuses and diminished opportunities.

Or we can mandate proper conflict resolution systems modelled on CCMA protocols: early intervention before tensions escalate, independent mediation with enforcement mechanisms, transparent timelines that prevent administrators from exploiting student patience, and genuine consequences for all parties who refuse to engage constructively.

The cost of ignorance is not measured only in repair bills. It is measured in lost academic years, in students who never graduate, in a generation that learns that destruction speaks louder than dialogue. Can we really afford to pay that price?

Pikolomzi Qaba is a PhD scholar at a South African university and works in communications in a government entity. These are his personal views.

Fort Hare's flames illuminate a choice. We can continue this cycle of frustration-fuelled destruction, with each generation of students inheriting damaged campuses and diminished opportunities. Or we can mandate proper conflict resolution systems modelled on CCMA protocols

—
Pikolomzi Qaba

SKILLING MZANZI — ADVERTORIAL

POWERING THE FUTURE: WHY ENERGY TRANSITION CAREERS MATTER

As South Africa's matriculants prepare to step into their future, one of the most exciting opportunities lies in careers linked to the energy transition. Around the world, governments, businesses, and communities are working to tackle climate change, ensure energy security, and build a more sustainable future. This shift is creating brand-new jobs – and South Africa is no exception.

One of the fastest-growing areas is energy efficiency. Simply put, energy efficiency is about finding smarter ways to use less energy while achieving the same – or even better – results. From designing energy-efficient buildings and appliances to developing new technologies that reduce waste, these careers are vital in a country like South Africa, where the demand for reliable and sustainable energy is greater than ever.

Choosing a career in this field doesn't just mean securing a future-proof job – it means

being part of the solution to some of the world's biggest challenges. Whether it's helping reduce carbon emissions, improving access to affordable energy, or supporting industries to use resources wisely, young South Africans can make a real difference.

That's where the Energy and Water Sector Education and Training Authority (EWSETA) comes in. EWSETA plays a critical role in preparing young people for careers that will power South Africa forward. Through training programmes, bursaries, partnerships with colleges and universities, and industry-aligned skills development, EWSETA is building the skills base needed for a greener, more resilient economy.

For school learners and particularly the Class of 2025 matriculants, this means a world of opportunity. Careers in renewable energy, green technology, water resource management,

and energy efficiency are not just “jobs of the future” – they are the careers that will drive South Africa's growth, sustainability, and global competitiveness.

So, as you choose your next step after matric, think beyond the traditional paths. The energy sector is waiting for young minds with curiosity, passion, and a drive to make a difference. By stepping into energy transition careers, you won't just be building your future – you'll be shaping the future of South Africa and the planet.

Here are a few young South African's who recently completed various Energy Performance and Energy Auditor programmes funded by EWSETA in partnership with sector stakeholders such as IEPA and SAEEC. Read what they have to say about how the programme changed their lives, their careers and their understanding of the importance of energy efficiency in creating a sustainable future for all.

www.ewseta.org.za



ENERGY AND WATER SECTOR EDUCATION AND TRAINING AUTHORITY

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PROJECT BENEFICIARY TESTIMONIAL

Khodani Tonic Nemathithi

Institute of Energy Professionals Africa (IEPA) and EWSETA, Energy Performance Certificate (EPC) programme

I'm **Khodani Tonic Nemathithi**, and I recently graduated from the **Institution of Energy Professionals Africa (IEPA) and EWSETA**. I earned my Energy Performance Certificate and have completed training as an Energy Efficiency Technician. I work as an Energy Auditor at Energy Cost Savers, where I've conducted over 20 energy surveys across various types of buildings, including supermarkets, factories and schools. My role involves identifying energy wastage and providing recommendations to improve efficiency and create safer working environments. The training has boosted my confidence and empowered me to contribute to a more sustainable future in a country with high unemployment, ultimately providing me with permanent employment and enabling me to support myself and my family.





Creating a Sustainable Tomorrow - Today

Creating a Sustainable Tomorrow - Today

PROJECT BENEFICIARY TESTIMONIAL

Reneilwe Mphahlele

Energy Professionals Africa (IEPA) and EWSETA, Energy Performance Certificate (EPC) programme

I'm **Reneilwe Mphahlele**, and I'm a proud graduate of the Institute of **Energy Professionals Africa (IEPA) and EWSETA**, Energy Performance Certificate (EPC) programme, as well as a recent intern for the Certified Energy Auditor programme. Thanks to these opportunities, I was placed with Blackdot Energy as my host employer, and I'm now an EPC practitioner, conducting assessments and implementing energy-saving measures to make buildings more efficient.

The programme was a game-changer for my career, giving me the skills to advise on energy efficiency and learn more about important standards and regulations for compliance. It has also provided me with hands-on experience, boosting my problem-solving skills and sparking a passion for continuous learning in the energy sector. As an EPC practitioner, I now qualify to work towards becoming a registered EPC professional. This journey has been truly rewarding, setting me on a path to a purposeful and impactful future, and I'm grateful for the opportunity.





Creating a Sustainable Tomorrow - Today

Creating a Sustainable Tomorrow - Today

PROJECT BENEFICIARY TESTIMONIAL

Nkosinathi Mthembu

Energy Professionals Africa (IEPA) and EWSETA Energy Performance Certificate and Certified Energy Auditor programme

My name is **Nkosinathi Mthembu**, and I am a recent graduate of the **Institution of Energy Professionals Africa (IEPA) and the EWSETA Energy Performance Certificate and Certified Energy Auditor programme**. During the programme, I worked as an Energy Auditor at PEM, where I conducted over 10 energy assessments for eThekwinini municipal projects and provided energy efficiency reports for buildings. The programme has enriched my skills in data collection, data analysis, and data capture. My understanding of energy has improved as we calculate the energy costs and potential savings in a year by reducing operating times. The programme not only improved my knowledge about energy efficiency but also about the impact it can have on climate change.





Creating a Sustainable Tomorrow - Today

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PROJECT BENEFICIARY TESTIMONIAL

Mbuso Tenza

Southern African Energy Efficiency Confederation (SAEEC) and EWSETA, Energy Auditor Certification programme

I'm **Mbuso Tenza**, and I am a recent graduate of the **Southern African Energy Efficiency Confederation (SAEEC) and EWSETA, Energy Auditor Certification programme**. The knowledge and skills I gained through this programme led me to my current role as an Energy Auditor and Energy Performance Certificate Inspector at CBRE Excellerate. In this role, I conduct energy audits on commercial properties, provide energy-saving recommendations, and verify compliance with energy performance standards. The EWSETA programme has been instrumental in equipping me with in-depth understanding and practical skills in energy efficiency, which I apply daily to enhance building energy performance and sustainability. This training has not only strengthened my career but has also deepened my commitment to sustainable energy practices.





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ENERGY AND WATER SECTOR EDUCATION AND TRAINING AUTHORITY

TRAVEL

Mapungubwe's true story yet to be told

SIMON NARE

The contribution of the descendants of the founders of the Southern African kingdom of Mapungubwe was being overlooked or deliberately hidden in favour of those who are said to have “discovered” the ancient site.

Pan-African musician, cultural worker and indigenous knowledge system practitioner Azah Mphago, delivering a lecture at the Mapungubwe National Park and World Heritage Site in October, said it was never an agenda of the colonialists to showcase the brilliance of the black people who had been living in the area and trading with other countries, including India, Egypt, and China, when ESJ van Graan, a Limpopo farmer, and his son were led to the site in 1932 by a local man known only as Mowena after hearing rumours of treasure.

The discovery led to the site's excavation and the realisation of its importance as the capital of a wealthy and sophisticated kingdom that existed between the 11th and 13th centuries.

Mphago argued that the farmer, who is credited with having “discovered” the historic site, would not have achieved much without the help of the people who were already living in the area.

He said that even archaeology has somehow not told the full story of the founders of Mapungubwe, who, thousands of years ago, were already mining and melting iron and crafting golden objects long before the settlers arrived.

“The misstep of archaeology is that the central figures and contributors are put aside. They are the least-known contributors. There was no way Van Graan would get this right, and if so, we know that the intention was never to highlight black excellence, Bantu excellence, as people that were able to melt iron and all that,” he said.

He decried that the resting place of the ancestors of the Bantu people had been left with the fingerprints of strangers, while the story of the women who made pottery and other artefacts that had been discovered in the area is never prominently told.

“That was not the agenda. The agenda was to interrupt the contribution, and they had to start with what? With nullifying the contribution of the feminine spirit,” he said.

Mphago went as far as say-



Vantage point: Visitors who attended the lecture series examine the landscape of Mapungubwe from on high. - Photo: Simon Nare.



Follow the leader: An armed Mapungubwe guard escorts visitors on a walk through the national park. - Photo: Simon Nare.

ing he was advocating for the return of some of the artefacts that were being preserved at the Javett Art Centre at the University of Pretoria to be brought back to the park and be burned. “Why, because they have spiritual purposes. So, if these things exist outside the purpose for which they were created, they are creating a mockery. Other people are profiting from these things in the same way other people are profiting from your identity crises,” he said.

In the main lecture of the Mapungubwe lecture series, Dr Nonhlanhla Vilakazi, palaeontologist and senior lecturer at the University of Johannesburg, in describing Mapungubwe as a living legacy, said that in the 21st century, there should be an interdisciplinary collaboration to break down traditionally separated disciplines.

Vilakazi said the new approach demanded a dialogue that would bring together ar-

chaeologists, historians, ecologists, climatologists, geochemists, and most importantly, the knowledge keepers, the elders and artists from the descendant communities.

“Our understanding is incomplete without their voices. This is not just an ethical imperative; it is an intellectual one, leading to better sites, a richer history, and more meaningful preservation.

“This integrated vision finds powerful expression in contemporary conservation frameworks like the South African National Parks framework 2040. Mapungubwe is a very good embodiment of a mega living landscape. It is not an isolated archaeological park, a museum under the sky.

“It is a vast interconnected region where the preservation of archaeology, the protection of iconic species like elephants and rhinos, the management of water resources, and meaning-

ful community engagement are understood to be inextricably linked,” she said.

Vilakazi said Mapungubwe was a prime example of how the country can steward its heritage in a way where ecological integrity, climate resilience, and human wealth advance together, as the park was people-centred.

She told of how she had to teach students at the University of Pretoria about Mapungubwe, and this opened her eyes as a Western-educated scholar to how people of the land were not consulted in collecting data. She said as she steeped deeper into the studies, this made her go back and reevaluate her approach.

Vilakazi said the greatest discovery in Mapungubwe was not the golden rhino, as it is popularly touted, but rather the

broken chain of sacred meaning that has persisted for nearly a million years.

She said the physical artefacts were evidence of Mapungubwe's historical grandeur and its status as a global treasury, and the wisdom of the descendants proved that its soul was still alive.

“It is a place where the past is not just studied but felt. During the drum performance [by Mphago], you could feel it, you could feel that this park comes alive at night, where heritage is not just preserved under the light but lived in the land and in the community.

“It is indeed a sacred place that continues to act as a bridge between the world of our ancestors and our world today, and guides us towards a more culturally grounded, spiritually aware, and collaborative future,” she said.

Ancient history

The ancient city of Mapungubwe (meaning ‘hill of the jackal’) is an Iron Age archaeological site in Limpopo on the border between South Africa, Zimbabwe and Botswana. One thousand years ago, Mapungubwe appears to have been the centre of the largest known kingdom in the African sub-continent. The civilisation thrived as a sophisticated trading centre from around 1200 to 1300 AD, trading gold and ivory with China, India and Egypt. Mapungubwe appears to have been a successor state, being forged as a response to new trading opportunities to the south of the Kingdom of Monomotapa (an African empire in Zimbabwe). Mapungubwe was declared a World Heritage Site by UNESCO in July 2003.—Adapted from South African History Online

SCIENCE & TECHNOLOGY

Young innovators dazzle with their inventions at the Sci-Botics Competition



Bright sparks: Learners from Grade R to 11 impressed Gauteng Education MEC Matome Chiloane with their innovative robots, impressive skills, and teamwork.
- Photo: X/GDE.

JOHNATHAN PAOLI

The future of innovation recently came alive in Johannesburg as the Gauteng Education Department hosted its inaugural #GDESciBOTICS Competition 2025 at the Sci-Bono Discovery Centre.

The GDE SciBOTICS Competition exposes youth from underserved communities to engineering problem-solving and challenges that are tricky but not impossible.

The competition takes place every year in September, and it's called GDE SciBOTICS because it's all about the future of science.

Gauteng Education, Sport, Arts and Culture MEC Matome Chiloane described the event as a milestone in preparing learners for the digital economy.

He explained that the competition represents a deliberate strategic vision for education in Gauteng, where learners are prepared not only academically but also with digital skills, physical wellness, collaborative spirits, and the innovative mindset required to shape the future.

"This competition proves

that Gauteng's children are not just learning about technology; they are building it, shaping it, and dreaming beyond limits," Chiloane said.

From Grade R pupils to Grade 11 learners, participants showcased robots, inventions, and coding projects that reflected extraordinary creativity and teamwork.

The competition, run in partnership with the Sci-Bono Discovery Centre, tested learners on Science, Technology, Reading, Engineering, Arts and Mathematics (STREAM) subjects with space-themed challenges that demanded technical skill and imagination.

Younger learners had to program robots to cross Martian terrain and consider what life on another planet might require.

Intermediate participants simulated supply missions to space outposts, while senior teams designed robots to navigate dangerous environments or propose solutions to pressing real-world problems.

The result was a buzzing atmosphere where classrooms of the future seemed to materialise

before the judges' eyes.

Several schools walked away with top honours across the four competition categories.

Laerskool Impala took the crown in the Junior division

"This is not just about coding or robotics. It is about igniting a passion for problem-solving, teamwork, and resilience."

—
MEC Matome Chiloane

with a playful project called "The Case of the Missing Space Snacks", while Lesolang Primary and Diepsloot Primary impressed with their teamwork and imaginative designs.

In the Explorer categories, Rebonwe Primary emerged as a champion with their "TechnoThinkers" concept, combin-

ing precision coding with futuristic storytelling.

Emdeni Secondary's "Stars of the Galaxy" stood out among Grade 8-9 learners, securing first place with a bold and polished project.

The Open Source section highlighted the creativity of older learners.

Rhodesfield High School triumphed with their quirky yet technically sharp "Robo-Tacos," while Pace School of Specialisation dominated the Grade 10-11 division with a life-saving design called "The Rescue Bots".

Inventor challenges added further excitement, as learners proposed their own original creations.

Khulanolwazi Primary impressed judges with "Future-Fit Inventors," Lawley Primary shone with "Young Astronomers", and Sgodiphola Secondary stole the spotlight in the senior Inventor category with their powerful project "Venom".

Chiloane praised the day's significance as lying beyond the medals.

"Every robot programmed, every obstacle overcome, and

every solution imagined here today shows us that tomorrow's innovators are here — in Gauteng classrooms. This is not just about coding or robotics. It is about igniting a passion for problem-solving, teamwork, and resilience," he said.

The Sci-Bono Discovery Centre designed the challenges to spark curiosity while grounding tasks in real-world science and engineering.

The University of Johannesburg TechnoLab's involvement added academic rigour, ensuring judging standards matched professional expectations.

Organisers confirmed that the competition will become an annual fixture in Gauteng's education calendar, with plans to expand its reach through regional leagues before the provincial finals.

The long-term goal is to develop a pipeline of digital innovators who can drive South Africa's knowledge economy.

Chiloane reinforced this ambition in his closing remarks, stating that the winners provided a glimpse of a province and a country that is ready to invent the future.

EDUCATION NEWS

What you need to know about AI and the right to education

UNESCO's report, 'AI and education: protecting the rights of learners' examines the possibilities and challenges digitalisation brings to the education sector

UNESCO

At a time when AI is rapidly transforming societies, the report provides an urgent call to action. It analyses how AI and digital technologies impact access, equity, quality and governance in education, and examines their implications for a wide spectrum of human rights, from privacy and cultural rights to the right to information and protection from violence.

Why is the right to education relevant in the conversation about AI?

The right to education is a fundamental human right. Education must be available, accessible, acceptable, and adapted to the needs of students. In today's digital age, ensuring education meets these criteria is more important than ever. UNESCO's new report takes a close look at both the possibilities and challenges the digitalisation brings to the education sector, with a special focus on accessibility and quality.

What questions does this report ask?

The report, taking a human-rights-based approach, seeks to answer three key research questions:

- What norms and standards, as currently laid out in the international human rights framework, apply to digitalisation processes in education?
- What are the opportunities and challenges associated with digitalisation in education, including the integration of AI?
- What considerations for national and international guidance can be elaborated to reinforce regulation in light of the evolving right to education framework?

To answer these questions, the report uses the 5C framework, which provides a common reference point for stakeholders to align their approaches to digital transformation in education: coordination and leadership; content and solutions; capacity and culture; connectivity and infrastructure; and cost and sustainability.

What are some of the key issues?

One major challenge is that high-speed internet access and access to



The future has arrived: By framing education as part of a broader human rights ecosystem, the UNESCO AI and education report calls for a comprehensive, rights-based approach to digital transformation in education. - Photo: Vecteezy.com

technology are becoming essential for learning. Yet, reliable internet connectivity remains a foundational barrier to ensuring the right to education.

While the percentage of internet users has grown significantly, internet access in schools remains uneven: only 40% of primary schools, 50% of lower secondary schools, and 65% of upper secondary schools globally have access to the internet.

These figures mask important regional variations: in the Americas, Europe, and the Commonwealth of Independent States, school connectivity ranges from 80-90%, while it drops to 64% in Asia-Pacific States and 40% in Africa. Rural areas in the least developed countries are particularly affected, with internet access as low as 14%.

Additionally, gender, disability, language, and age remain compounding factors that limit access and deepen the digital divide. The report explores these intersections and provides policy guidance to address them.

As AI becomes increasingly integrated into education systems, the consequence of digital exclusion grows more severe.

Without equitable, affordable, and sustainable access to the internet and digital devices, many

learners are at risk of being left further behind and not being able to exercise their right to education. Bridging this gap is not only critical to realising the right to education but also for ensuring that emerging technologies benefit all learners – not just those in already connected regions.

Are there links to other rights?

Education is a cornerstone for realising human rights and is deeply intertwined with many other human rights. As AI becomes more embedded in education systems, it raises pressing questions about other rights, such as rights to privacy, work, culture, autonomy, and the right to be heard. How will student data, for example, be collected and used, including by private companies? How can we ensure that the best interests of the child are upheld in digital learning environments? And how can digital tools be made truly inclusive, especially for speakers of underrepresented languages online?

The report explores these complex intersections and offers critical insights for policymakers and educators. By framing education as part of a broader human rights ecosystem, it calls for a comprehensive, rights-based approach to digital transformation in education.

What are the report's main findings?

The report identifies several legal concerns arising from the digitalisation of education and the accelerated use of AI. These include access, bias and ethics, protection, cultural and linguistic diversity, vulnerability, and accountability. While these concerns vary across regions, they represent core challenges that must be addressed globally to ensure that digitalisation enhances rather than undermines the right to education.

The report calls for countries to integrate human rights protections into digital learning environments. Focusing on coordination, content, capacity, connectivity, and cost, it provides guidelines for a digital transformation of education that upholds the right to education. Necessary safeguards must be put in place to ensure that no one is left behind in the digital age.

What is UNESCO's role in follow-up?

UNESCO works with governments to support inclusive and human-centred digital learning ecosystems.

Since 2024, UNESCO has supported 58 countries in designing or improving digital and AI

competency frameworks, curricula, and quality-assured training for educators and policymakers. The UNESCO Recommendation on the Ethics of Artificial Intelligence and AI competency frameworks for teachers and students have created a roadmap for an ethical, equitable, and human-centred and human-rights-based future for AI in education.

The new publication is part of UNESCO's ongoing efforts to support countries in integrating AI into the education system. UNESCO has previously published the first-ever Guidance for Generative AI in Education and research to help navigate AI critically, creatively, and ethically. It has also prepared AI competency frameworks for teachers and students to help the integration of AI learning objectives into curricula and teaching practices.

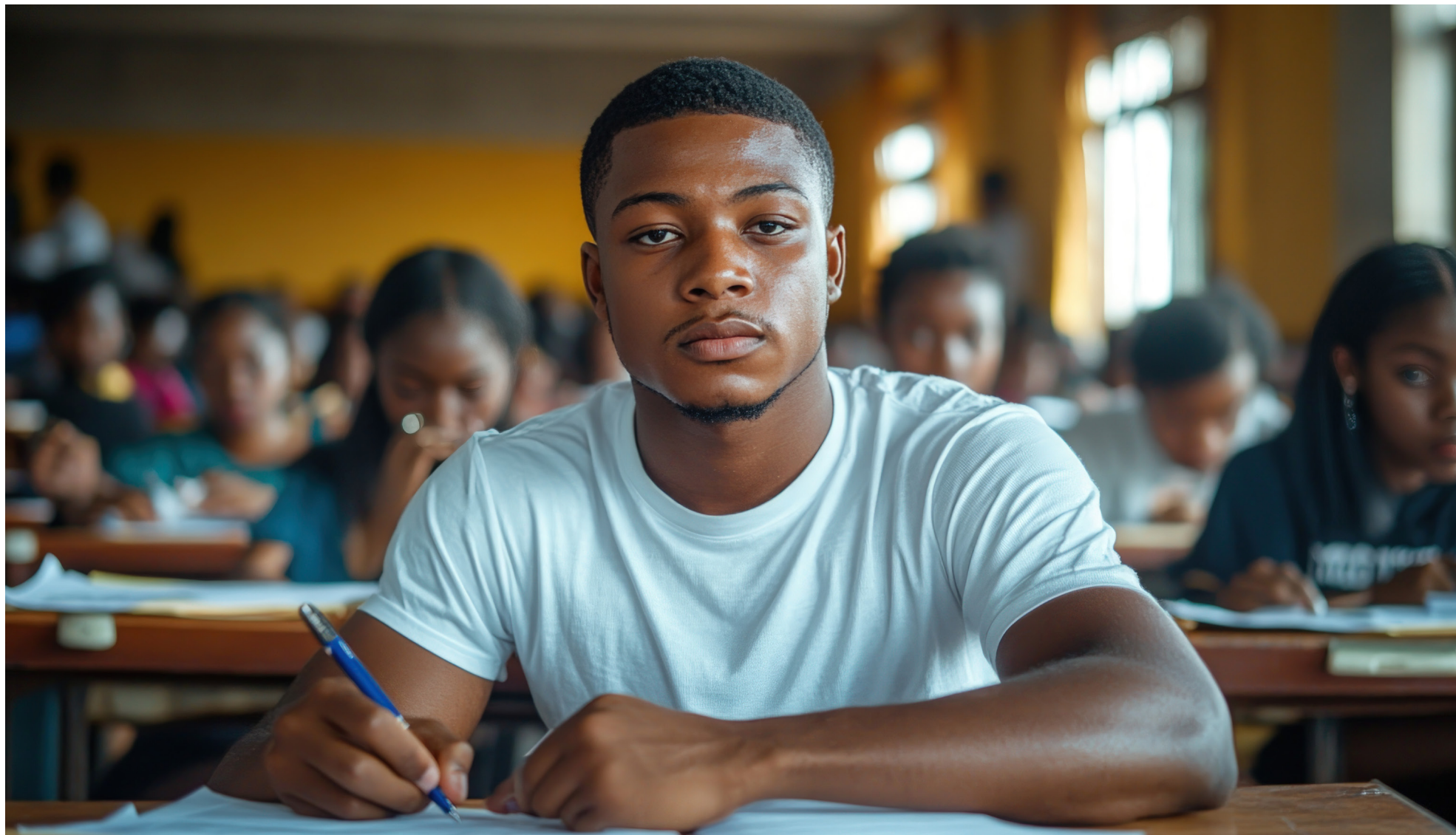
As education continues to evolve and new challenges emerge, the Initiative on the Evolving Right to Education is exploring how the international human rights framework can be reinforced and further developed to respond to the reality of diverse and ever-changing societies.

The full report is available at: <https://unesdoc.unesco.org/ark:/48223/pf0000395373>

EDUCATION NEWS

There's only one exam certificate

Dispelling misconceptions around exam standardisation



Acceptable process: Umalusi aims to dispel the myths and misconceptions about what exam standardisation is and what it is not. - Photo: Vecteezy.com.

JANINE GREENLEAF WALKER

The standardisation of external examination results is an internationally acceptable process that takes place in every country under the control and management of its various examination boards.

It is not unique to South Africa, which started the practice in 1918 during the Joint Matriculation Board era, which lasted until 1992.

The process ensures that the results of different examination series are comparable over time, despite variations in the difficulty of the question papers or other factors that might affect student performance.

This was one of the key messages shared by Biki Lepota, Senior Manager: Public Relations and Communications at Umalusi, representing the Umalusi CEO, Dr Mafu Rakometsi, at the Universities South Africa's Education Deans' Forum meeting on 15 August.

"Every year, the CEO of Umalusi addresses stakeholders in the higher education sector about what standardisation is and what it is not, because of the myths and misconceptions surrounding it," he

said.

Umalusi, which was officially established in 2001, ensures quality assurance in basic and further education and training in South Africa. Its functions extend to accrediting private education institutions and assessment bodies, monitoring their standards, and issuing certificates for specific qualifications.

Umalusi's mandate is derived from the General and Further Education and Training Quality Assurance Act and the National Qualifications Framework Act.

The standardisation of examination marks is assigned to the Assessment Standards Committee of the Umalusi Council. Its members are not Umalusi employees, Lepota emphasised, but are rather independent experts drawn from various universities and research institutions. They are subject matter experts in education, business sciences, mathematics, etc, with years of experience in schools and higher education systems.

He said the value of standardisation lies in the fact that it mitigates the impact on performance of factors outside of the learners' subject knowledge, abilities and aptitude. Standardisation addresses any variation in the standard of question papers, which may

occur despite careful moderation processes, as well as variations in the standard of marking that may occur from year to year. Standardisation also ensures comparability and consistency in learner performance across years.

There is only one examination certificate.

Lepota stated that all examination candidates receive the same National Senior Certificate (NSC)

from Umalusi, ensuring consistency in the final qualification.

"One of the biggest misconceptions is that there are two matric qualifications – the Department of Basic Education (DBE) matric and an Independent Examinations Board (IEB) matric," he said. "There is only one NSC in South Africa. Umalusi is responsible for quality assuring the NSC as administered by both the DBE and private assessment bodies, such as the South African Comprehensive Assessment Institute and the IEB.

"I want to repeat that the IEB is not a qualification but an assessment body that sets examinations linked to the NSC," Lepota said. "Those examinations are quality assured by Umalusi, and the learners in the IEB system receive the same NSC issued to all other Grade 12 learners. Two NSC certificates issued by Umalusi are identical, whether issued by the IEB or by the Department of Basic Education. The only differentiator will be the school where the learner wrote their examination."

Lepota said Umalusi recently benchmarked the NSC against five international qualifications, namely the International Baccalaureate Diploma Programme; the Kenyan national education system; the state education system of New

South Wales, Australia; the Zimbabwean national education system (Forms 5-6 advanced level); and the Cambridge Assessment International Education AS/A Levels.

According to findings reported by Ecctis, an international expert in the recognition, evaluation and comparability of qualifications and skills, the study concluded that the NSC offers an internationally comparable level of education.

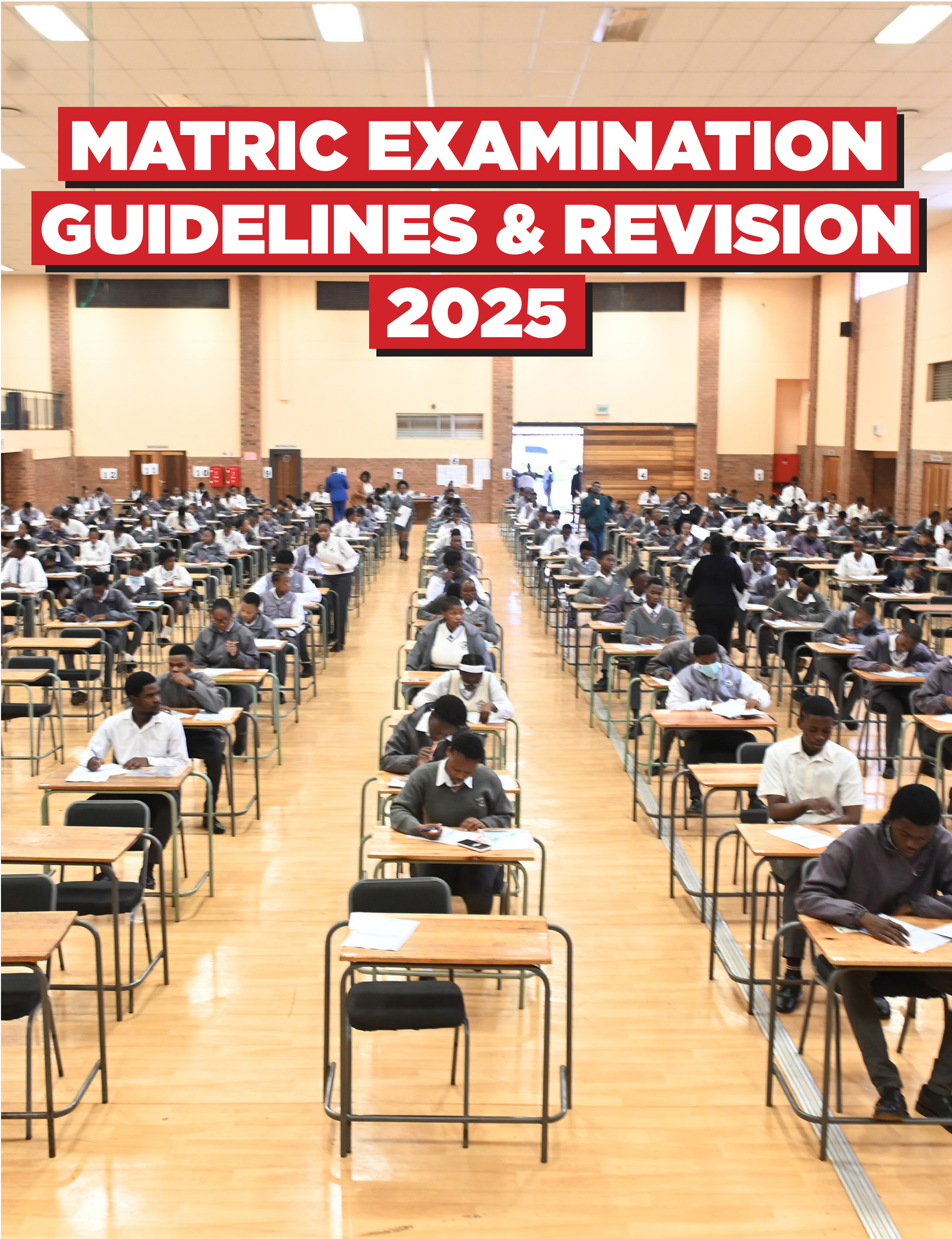
Lepota said one of the key determinants of the final NSC marks is the School-Based Assessment mark. "Reviewing this, we discovered that some students write assignments with the help of artificial intelligence (AI)." He said Umalusi and all educational institutions must learn to navigate this new territory.

He concluded by saying Umalusi would be delighted to participate in the annual Education Deans' Forum Colloquium set for 20 November, under the theme Digital Transformation and Inclusivity in Initial Teacher Development. Topics to be covered include Assessment and Academic Integrity in the AI Era and Teacher Identity in the Age of AI.

Janine Greenleaf Walker is a contract writer for Universities South Africa.

Two NSC certificates issued by Umalusi are identical, whether issued by the IEB or by the Department of Basic Education. The only differentiator will be the school where the learner wrote their examination.

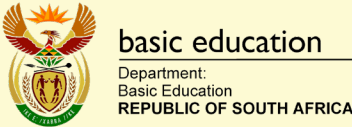
*Biki Lepota,
Umalusi*



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FOCUS ON THE CLASS OF 2025

Examination Readiness

“Towards Examination Fitness”

(This booklet is not for sale)



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1. Introduction

The booklet **starts with the 2025 examination time table which is the most important planning tool**. All the 2025 matric students **must read the composite time table and identify their subjects, papers, dates of the examination, times of examination and duration of each paper**. This is the first step towards success because it prepares the learner psychologically for the examination.

In the discussion of the profile of the “Class of 2025” one of the challenges mentioned is that **they were not exposed to full scale examinations experience as a result of “COVID-19 restrictions”**. There were **temporal measures to re-align formative assessment and summative assessments so that**

the time available for teaching is maximized.

The aim of this booklet is to provide information that will help the matric learner of 2025 with skills which are necessary for the preparation of the National Senior Certificate examination. The examination related aspects discussed are those which relate to the examination (action verbs, types of questions etc.). It is important for each learner to have a study programme/time table is very important so that learners start preparing according to the final National Examinations Time Table.

Although it is important to prepare for the whole examination (larger scale preparation), it is equally important to prepare for each paper (small scale preparation). The information contained in this booklet will help the “Class of 2025” to understand the task of writing the National Senior Certificate examination and to get prepared and organized for the whole examination and for each paper. The booklet also contains the pass requirements of the National Senior Certificate Examinations. This is very important because learners must have success targets. If learners know the pass requirements, they study with a specific purpose in mind instead of studying without knowing what they want to achieve.

The booklet provides the 2025 matric learners with skills for practicing various types of questions taking into consideration the Examiners comment that learners were poor in responding to source-based questions. The understanding of action verbs is the other critical aspect of preparation. The booklet also gives the 2025 matric learners an explanation of common action verbs used by examiners when asking questions. This is important because the collection of marks by each learner depends on their ability to follow the instructions of Examiner. Therefore, the understanding of the action verbs is very important. Each learner must be able to complete the question paper to avoid the risk of failure. Therefore, time budget is the other important skills required for writing examination.

The 2025 examination questions in all papers will come with different types of questions and each learner must have skills of answering those questions. The booklet provides the 2025 matric learners with skills for answering various types of questions. Finally, the booklet provides the “Class of 2025” with some of the tips for preparing for the examinations and for managing the examination day. This is important because each matric learner in 2025 must know what is required of them in the examination room. The “Class of 2025” must use this booklet to prepare themselves for the coming 2025 National Senior Certificate examination.

2. The 2025 National Senior Certificate Examination Timetable

Each matric learner must know the 2025 National Senior Certificate examination. This includes the subject, the paper (1 or 2 or 3 depending on whether it is content or language), the examination date, the session (morning or afternoon) the start time and the completion time. It is also important for the candidates to know the dates on which they are not writing examinations. These are not “free days” but they must be used for studying, consultations with subject teachers, attending revision sessions and for attempting previous examination questions. The following is the 2025 National Senior Certificate Examination Time Table. Learners must use this to draw their personal time tables and personal study time tables. The most important thing is that the time table must be used as a planning tool for learners to improve their state of readiness for the 2025 National Senior Certificate Examination.

NATIONAL SENIOR CERTIFICATE (NSC)

OCTOBER/NOVEMBER EXAMINATIONS TIMETABLE 2025

WEEK 1	09:00	14:00
Monday 20/10	NON-EXAMINATION DAY	
Tuesday 21/10	Computer Applications Tech P1 (3hrs) Practical	Hindi, Gujarati, Tamil, Telegu, Urdu HL P1 (2hrs) Hindi, Gujarati, Tamil, Telegu, Urdu FAL P1 (2hrs) Hindi, Gujarati, Tamil, Telegu, Urdu SAL P1 (2hrs) Hebrew SAL P1 (2hrs) German HL, SAL P1 (2hrs)
Wednesday 22/10	Information Technology P1 (3hrs) Practical	Arabic, French, Italian, Mandarin, Modern Greek, Serbian, Spanish SAL P1 (2hrs) Latin SAL P1 (3hrs) Portuguese HL, FAL, SAL P1 (2hrs)
Thursday 23/10	English HL P3 (3hrs) English FAL P3 (2½hrs) English SAL P3 (2½hrs)	Arabic, French, Italian, Mandarin, Modern Greek, Serbian, Spanish SAL P2 (2hrs) Latin SAL P2 (2hrs) Portuguese HL P2 (2½hrs), FAL, SAL P2 (2hr) Equine Studies (3hrs)
Friday 24/10	Afrikaans HL P3 (3hrs) Afrikaans FAL P3 (2½hrs) Afrikaans SAL P3 (2½hrs)	Hindi, Gujarati, Tamil, Telegu, Urdu HL P2 (2½hrs) Hindi, Gujarati, Tamil, Telegu, Urdu FAL P2 (2hrs) Hindi, Gujarati, Tamil, Telegu, Urdu SAL P2 (2hrs) Hebrew SAL P2 (2hrs) German HL P2 (2½hrs), SAL P2 (2hrs)
WEEK 2	09:00	14:00
Monday 27/10	isiZulu, isiXhosa, siSwati, isiNdebele HL P3 (3hrs), FAL P3 (2½hrs), SAL P3 (2½hrs)	Hindi, Gujarati, Tamil, Telegu, Urdu HL P3 (2½hrs) FAL P3 (2½hrs) Portuguese, German HL P3 (2½hrs) Portuguese FAL P3 (2½hrs)
Tuesday 28/10	Sepedi, Sesotho, Setswana, Xitsonga, Tshivenda HL P3 (3hrs), FAL P3 (2½hrs), SAL P3 (2½hrs) South African Sign Language HL P3 (3hrs)	Economics P2 (2hrs)
Wednesday 29/10	English HL P1 (2hrs) English FAL P1 (2hrs) English SAL P1 (2hrs)	Hindi, Gujarati, Tamil, Telegu, Urdu HL P3 (2½hrs) FAL P3 (2½hrs) Portuguese, German HL P3 (2½hrs) Portuguese FAL P3 (2½hrs)

Thursday 30/10	History P1 (3hrs)	Engineering Graphics and Design P1 (3hrs)
Friday 31/10	Mathematics P1 (3hrs) Mathematical Literacy P1 (3hrs) Technical Mathematics P1 (3hrs)	Religion Studies P1 (2hrs)
WEEK 3	09:00	14:00
Monday 03/11	Mathematics P2 (3hrs) Mathematical Literacy P2 (3hrs) Technical Mathematics P2 (3hrs)	Agricultural Sciences P1 (2½hrs)
Tuesday 04/11	isiZulu, isiXhosa, siSwati, isiNdebele HL P1 (2hrs), FAL P1 (2hrs), SAL P1 (2hrs)	Accounting P2 (2hrs) Maritime Economics (3hrs)
Wednesday 05/11	English HL P2 (2½hrs) English FAL P2 (2½hrs) English SAL P2 (1½hrs)	Religion Studies P2 (2hrs) Mechanical Technology (3hrs)
Thursday 06/11	isiZulu, isiXhosa, siSwati, isiNdebele HL P2 (2½hrs), FAL P2 (2½hrs), SAL P2 (1½hrs)	Business Studies P1 (2hrs)
Friday 07/11	Physical Sciences (Physics) P1 (3hrs) Technical Sciences P1 (3hrs)	History P2 (3hrs)
WEEK 4	09:00	14:00
Monday 10/11	Physical Sciences (Chemistry) P2 (3hrs) Technical Sciences P2 (1½hrs)	Visual Arts P1 (3hrs) Nautical Science P1 (3hrs)
Tuesday 11/11	Afrikaans HL P1 (2hrs) Afrikaans FAL P1 (2hrs) Afrikaans SAL P1 (2hrs)	Business Studies P2 (2hrs)
Wednesday 12/11	Geography (Climate and Weather, Geomorphology and Map Work) P1 (3hrs)	Computer Applications Tech P2 (Theory) (3hrs) Nautical Science P2 (3hrs)
Thursday 13/11	English HL P2 (2½hrs) English FAL P2 (2½hrs) English SAL P2 (1½hrs)	Information Technology P2 (Theory) (3hrs) Marine Sciences P1 (2½hrs)
Friday 14/11	Life Sciences P1 (2½hrs)	Electrical Technology (3hrs)
WEEK 5	09:00	14:00
Monday 17/11	Life Sciences P2 (2½hrs)	Dramatic Arts (3hrs)
Tuesday 18/11	Geography (Rural and Urban Settlements, Economic Geography of SA and Map Work) P2 (3hrs)	Engineering Graphics and Design P2 (3hrs)
Wednesday 19/11	Economics P1 (2hrs)	Tourism (3hrs)
Thursday 20/11	Sepedi, Sesotho, Setswana, Xitsonga, Tshivenda HL P2 (2½hrs), FAL P2 (2½hrs), SAL P2 (1½hrs) South African Sign Language HL P2 (2½hrs)	Agricultural Sciences P2 (2½hrs)
Friday 21/11	Afrikaans HL P2 (2½hrs) Afrikaans FAL P2 (2½hrs) Afrikaans SAL P2 (1½hrs)	Economics P2 (2hrs)
WEEK 6	09:00	14:00
Monday 24/11	Agricultural Technology (3hrs) Music P1 Theory (3hrs)	Design (3hrs)
Tuesday 25/11	Consumer Studies (3hrs) Hospitality Studies (3hrs)	Dance P1 (3hrs)
Wednesday 26/11	Agricultural Management Practices (3hrs) Marine Sciences P2 (2½hrs)	Music P2 Comprehension (1½hrs)
Thursday 27/11	CAT P1 rewrite (3hrs) Practical IT P1 rewrite (3hrs) Practical	
09:00		
Friday, 17 th October 2025	Pledge Signing	
Monday, 1 st September 2025	Life Orientation (LO CAT) (2½hrs)	
Tuesday, 14 th October 2025	Life Orientation (LO CAT) (2½hrs) Rewrite	
14 th August 2025 to 24 th October 2025	Performing Arts Practical	
14th October 2025 to 24 th October 2025	Visual Arts and Design Practical	

3. Achievement aspects in the National Senior Certificate Examinations

3.1. Performance levels in the National Senior Certificate Examinations

PERFORMANCE LEVELS	PERCENTAGE	DESCRIPTION
Level 7	80%-100%	Outstanding achievement
Level 6	70%-79%	Meritorious achievement
Level 5	60%-69%	Substantial achievement
Level 4	50%-59%	Moderate achievement
Level 3	40%-49%	Adequate achievement

Level 2	30%-39%	Elementary achievement
Level 1	0%-29%	Not achieved: Fail

- 3.2 Compulsory subjects
- Home Language
 - First Additional Language (A candidate may offer a second Home Language instead of a First Additional Language)
 - Mathematics or Mathematical Literacy
 - Life Orientation
 - Either English or Afrikaans as one of the languages

3.3 Pass requirements

3.3.1 Bachelor pass requirements

With a Bachelor pass you can apply to study towards a degree or a Diploma or a Higher Certificate. The following are requirements for a Bachelor pass in the National Senior Certificate examination.

- Must obtain at least 40% for your Home Language (compulsory),
- Must obtain at least 50% for four other subjects excluding Life Orientation,
- Must obtain at least 30% in Language of Learning and Teaching (LOLT) of the tertiary (Higher Education) institution,
- Must obtain at least 30% for one other subject,
- Must pass at least 6 out of 7 subjects.

3.3.2 Diploma pass requirements

A matric learner who obtains a Diploma pass stands a chance to study towards a Diploma or a Higher Certificate at a University, a University of Technology, a TVET College or any other accredited institution of higher learning. The following are pass requirements for obtaining a Diploma pass.

- Must obtain at least 40% for the Home Language (compulsory)
- Must obtain at least 40% in three other subjects excluding Life Orientation.
- Must obtain at least 30% in the Language of Teaching and Learning (LoLT)
- of the tertiary institution/institution of higher learning.
- Must pass at least 6 out of the 7 subjects.

3.3.3 Higher Certificate Pass requirements

A matric learner who obtains a Higher Certificate pass stands a chance to study towards a Higher Certificate at a University, a University of Technology, a TVET College or any other accredited institution of higher learning. The following are requirements for obtaining a Higher Certificate pass.

- Must obtain at least 40% for the Home Language (compulsory)
- Must obtain at least 40% in two other subjects excluding Life Orientation.
- Must obtain at least 30% in other four subjects.
- Must pass at least 6 out of the 7 subjects.

4. The Personal Examination Time Table

You must know the date of the examination and the time at which the examination will be written (Detail of the Examination). You must know the duration of the paper. All this information is available in the in the examination time table. However, the time table (composite time table) speaks to what all learners in the Republic of South Africa will be writing. You need your PERSONAL TIME TABLE. Your personal Time Table is similar to the composite Time Table except that it ONLY shows subjects which you will write and NOT THOSE WHICH YOU WILL NOT BE WRITING. Let us emphasise this, "it is good to know the DATES OF THE EXAMINATION, the TIMES OF THE EXAMINATION, the PAPERS and the DURATION of papers.

Look at an example of Tsepo Dlamini, a matric learner in the "Class of 2025". Tsepo will write the National Senior Certificate examination in certain subjects (not in all subjects). Tsepo has analysed the 2025 examination time table and isolated subjects that he will be writing details.

This has a positive psychological effect as Tsepo knows how he will manage the time until the end of the exam. His personal time table will influence his study time table. Tsepo will write 14 papers in the 2025 NSC examinations. He knows the DATES OF THE EXAMINATION, the TIMES OF THE EXAMINATION, the PAPERS and their DURATION.

Date	Subject	Paper	Duration	Start	Minutes	Finish
30/10/2025	English FAL	1	2.5 hours	14h:00	150	16h:30
03/11/2025	Mathematics	1	3 hours	09h:00	180	12h:00
06/11/2025	Mathematics	2	3 hours	09h:00	180	12h:00
09/11/2025	Sesotho HL	1	2.5 hours	09h:00	150	11h:30
10/11/2025	Physical Sciences	1	3 hours	09h:00	180	12h:00
13/11/2025	Physical Sciences	2	3 hours	09h:00	180	12h:00
14/11/2025	Geography	1	3 hours	09h:00	180	12h:00
15/11/2025	English FAL	2	2.5 hours	14h:00	150	16h:30
17/11/2025	Life Sciences	1	2.5 hours	09h:00	150	11h:30
20/11/2025	Life Sciences	2	2.5 hours	09h:00	150	11h:30
21/11/2025	Geography	2	1.5 hours	14h:00	90	15h:30
21/11/2025	Sesotho HL	2	2 hours	09h:00	120	11h:00
28/11/2025	Sesotho HL	3	2.5 hours	09h:00	150	11h:30
29/11/2025	English FAL	3	2.5 hours	14h:00	150	16h:30

As a candidate in the "Class of 2025", you can do like Tsepo Dlamini. The template below is included for you so that you can make your own analysis of your examination and know what you will be faced with in those few weeks.

Date	Subject	Paper	Duration	Start	Minutes	Finish

3/10/2025		
3/10/2025		
4/10/2025		
4/10/2025		
4/10/2025		
5/10/2025		
5/10/2025		
5/10/2025		
6/10/2025		
6/10/2025		
6/10/2025		
7/10/2025		
7/10/2025		
7/10/2025		
8/10/2025		

WEEK THREE - 16 OCTOBER 2025 TO 22 OCTOBER 2025		
DATE	SUBJECT	DURATION WITH BREAKS
16/10/2025	English First Additional Language	1 hr.
16/10/2025	Mathematics	2 hr.
16/10/2025	Sesotho Home Language	1 hr.
17/10/2025	English First Additional Language	1 hr.
17/10/2025	Mathematics	2 hr.

17/10/2025	Sesotho Home Language	1 hr.
18/10/2025	English First Additional Language	1 hr.
18/10/2025	Physical Sciences	2 hr..
18/10/2025	Sesotho Home Language	1 hr.
19/10/2025	English First Additional Language	1 hr.
19/10/2025	Physical Sciences	2 hr.
19/10/2025	Sesotho Home Language	1 hr.
20/10/2025	English First Additional Language	1 hr.
20/10/2025	Mathematics	2 hr.
20/10/2025	Sesotho Home Language	1 hr.
21/10/2025	English First Additional Language	1 hr.
21/10/2025	Mathematics	2 hr.
21/10/2025	Sesotho Home Language	1 hr.
22/10/2025	Mathematics	3hr.

CREATE YOUR OCTOBER WEEK 3 STUDY/REVISION TIME TABLE

WEEK THREE - 16 OCTOBER 2025 TO 22 OCTOBER 2025		
DATE	SUBJECT	DURATION WITH BREAKS
16/10/2025		
16/10/2025		
16/10/2025		
17/10/2025		
17/10/2025		
17/10/2025		
18/10/2025		
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21/10/2025		
21/10/2025		
21/10/2025		
22/10/2025		

REVISION/STUDY TIME TABLE – WEEK 4 OF OCTOBER

WEEK 4 - 23 OCTOBER 2025 TO 30 OCTOBER 2025		
DATE	SUBJECT	DURATION WITH BREAKS
23/10/2025	English First Additional Language	1 hr.
23/10/2025	Mathematics	2 hr.
23/10/2025	Sesotho Home Language	1 hr.
24/10/2025	English First Additional Language	1 hr.
24/10/2025	Mathematics	2 hr.
24/10/2025	Sesotho Home Language	1 hr.
25/10/2025	English First Additional Language	1 hr.
25/10/2025	Physical Sciences	2 hr.
25/10/2025	Sesotho Home Language	1 hr.
26/10/2025	English First Additional Language	1 hr.
26/10/2025	Physical Sciences	2 hr.
26/10/2025	Sesotho Home Language	1 hr.
27/10/2025	English First Additional Language	1 hr.
27/10/2025	Geography	2 hr.
27/10/2025	Sesotho Home Language	1 hr.
28/10/2025	Mathematics	3 hr.
28/10/2025	Physical Sciences	2 hr.
28/10/2025	English First Additional Language	2 hr.
29/10/2025	Mathematics	3 hr.
29/10/2025	English First Additional Language	3 hr.
30/10/2025	English First Additional Language	3 hr.

CREATE YOUR OCTOBER WEEK 4 STUDY/REVISION TIME TABLE

WEEK 4 - 23 OCTOBER 2025 TO 30 OCTOBER 2025		
DATE	SUBJECT	DURATION WITH BREAKS
23/10/2025		
23/10/2025		
23/10/2025		

24/10/2025		
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29/10/2025		
30/10/2025		

7. Understanding of cognitive levels

The National Curriculum Statement is the education of the head (knowledge), education of the hand (skills), education of the heart (values) and education of the soul (attitudes). Therefore, the questions are pitched at various levels of difficulty. Depending on the subject, there will be knowledge testing questions, comprehension testing questions, application testing questions and critical thinking testing questions. These questions will come in the form of LOW ORDER, MEDIUM ORDER and HIGH ORDER items. This means that questions are pitched at different levels of difficulty. These levels of difficulty are sometimes called “cognitive demands or cognitive levels”.

Knowledge questions demand that you demonstrate knowledge and they can be pitched as low order or at medium order or at a high order level. There are application questions which require the use (application) of knowledge can also be asked as low, medium or high order. There are comprehension questions which require you to demonstrate understanding of content taught. There are analytical or analysis questions which require you to apply critical thinking skills. From this variety of cognitive levels, Examiners are able to set low order questions, middle order question and high order questions.

8. “Question-verbs” or “Action-verbs” used by Examiners

In tests, assignments, projects and other forms of assessment there are action verbs used to set questions. The action verb indicates the kind and depth of answer that is needed in a particular test or examination question. Action verbs are important because they determine the type of answer that the examiner wants so as to give marks. This is a reason why you must use previous matric papers (especially from 2014 to 2019) to study for your tests and examinations. If you use previous question papers and memoranda to study, you will be more familiar with common action verbs in subjects. The action verbs carry marks. Where the Examiner wants you to discuss, you must not list, you must discuss.

You must know that the examiner is only prepared to give marks only if you do what the action verb tells you do. If the examiner asks you to discuss and you decide to list, you will not get the full marks because the examiner will only give you full marks if you discuss. When you study you must ensure that you understand the expectation of the Examiners in each question. The following discussion will focus on the common action verbs and expectations of the Examiner in examinations.

- a. KNOWLEDGE
- b. COMPREHENSION
- c. APPLICATION
- d. ANALYSIS (CRITICAL THINKING)

8.1 Common Action verbs for testing KNOWLEDGE

QUESTION VERB	EXPECTATION FROM THE LEARNER
List	THE EXAMINER WANTS YOU TO LIST what is requested without explaining (list of characteristics, factors, causes, consequences, measures, events, solutions etc.). DO NOT DISCUSS REQUESTED ITEMS BECAUSE THERE ARE NO MARKS FOR DISCUSSION. Instead, discussion will consume your time for completing the examination.
Label	In LABEL question you are given something from your subject e.g. a diagram of the animal cell and ASKED TO LABEL IT. Each of the parts are given numbers (e.g. 1) or letters (e.g. (a). The examiner can say “Label and discuss the importance of each part.
Name	NAME can be a lower order question or a middle order question and even a higher order question. It depends on how the examiner phrases the question. A question which says NAME THE FEATURES OF A BALANCED ATMOSPHERIC SYSTEM. This is different from the question which says NAME AND DISCUSS THE SOCIAL CONSEQUENCES OF THE COVID-19 PANDEMIC. In the first question you have a low order question but in the second question you must apply your mind in first separating between the financial, social and political consequences of COVID-19. If you name the financial consequences you will lose marks
Relate	IN THIS QUESTION YOU ARE EXPECTED TO SHOW THE KEY LINKS OR CONNECTIONS between ideas or events or processes. you may give examples as you show similarities and connections e.g. RELATE THE FACTORS LEADING TO THE END OF HOMELAND SYSTEM IN SOUTH AFRICA.

MATRIC GUIDELINES

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State	IN THIS QUESTION YOU MUST MENTION INFORMATION WITHOUT DISCUSSING IT. This question is different from the “List Question” because you must give relevant points briefly without making lengthy discussions e.g. STATE THE FACTORS THAT LED TO THE INTENSIFICATION OF BLACK RESISTANCE IN SOUTH BETWEEN 1970’S AND 1990’S.
Define	THE EXAMINER WANTS YOU TO GIVE THE DEFINITION/MEANING OF SOMETHING. It can be an object (e.g. a plant cell), a process (e.g. osmosis), an event (e.g. the African Renaissance) etc. You answer depends on what you must define. It is different from discussion because you are only expected to define the object or the event or the process etc.

8.2 Action verbs testing COMPREHENSION

ACTION VERB	EXPECTATION FROM THE CANDIDATE
Describe	In this question the EXAMINER WANTS YOU TO GIVE CHARACTERISTICS OR DETAILS OF SOMETHING OR AN EVENT OR A PROCESS OR A CHALLENGE/A PROBLEM ETC. Never list in this question. You must write so that the person who has never seen or has never heard of what you are describing can develop a mental picture of it.
Discuss	In this question you must talk about a something or an event or a process or a challenge/a problem etc. in your own words. You must demonstrate your understanding/comprehension of what you are discussing. EVEN IF YOU HAVE INFORMATION, YOU MUST PRESENT IT IN THE FORM OF A DISCUSSION. You must have an opening sentence, a discussion and a closing sentence depending on what you are discussing.
Summarise	When the Examiner wants you to summarise, YOU MUST PROVIDE THE MAIN POINTS OR FACTS ABOUT A PARTICULAR EVENT OR PROCESS OR PROGRAMME. You must condense the information as expected. There is a thin line of difference between “SUMMARISE” and “OUTLINE”
Explain	In this question you are free to give a mixed response. Depending on the question, you can start by defining. From there you can give details about what you have defined. You can even compare what you are talking about with other similar things or processes. You may even give advantages and disadvantages of something. BE CAREFUL, the Examiner may guide you in a question by saying (EXPLAIN WHY?). In such cases you must explain reasons. The Examiner may guide you in a question by saying (EXPLAIN THE DIFFERENCES). In such cases you must explain those differences. The Examiner may guide you in a question by saying (EXPLAIN THE CHALLENGES).
Identify	This question is always accompanied by a source material e.g. an object in the picture, a feature on a map, a process shown in the diagram etc. THE EXAMINER EXPECTS YOU TO NAME SOMETHING REPRESENTED BY A SYMBOL OR A NUMBER. This question looks easy but it is not easy because you must understand your content in order to identify. It is usually asked as a comprehension question. However, it can be asked as a knowledge question. It can be in a double action verb question e.g. IDENTIFY FEATURE A IN THE PICTURE AND DISCUSS ITS ROLE IN THE HUMAN BODY.
Compare	In this question YOU MUST SHOW BOTH DIFFERENCES AND SIMILARITIES IN A BALANCED WAY. In most cases you must show that you understand these similarities and differences by explaining them with an intention to show how they differ and how they are similar. The marks given to the question will direct you on how much you must write.
Contrast	Here you must SHOW THE DIFFERENCES BETWEEN THE GIVEN THINGS OR FEATURES. The main thing in this question is about differences.
Outline	THIS IS NEARLY CLOSER TO “SUMMARISE” EXCEPT THAT IN THIS QUESTION YOU MUST ORGANISE YOUR RESPONSE STARTING FROM THE FIRST ASPECTS AND END UP WITH THE LAST ASPECTS. You must not give details but you must give essential points in a manner that leads to a logical sequence. In this question you are more systematic than in the SUMMARISE question. Here you can add illustrations and examples.

8.3 Action verbs testing APPLICATION

ACTION VERB	EXPECTATION FROM THE CANDIDATE
Apply	This is an application question where the EXAMINER WANTS YOU TO USE YOUR KNOWLEDGE TO ANSWER THE QUESTION. You must show how a certain principle or an idea or a method or a model can work in a real situation.
Classify or Organise	In this question you must GROUP whatever is given in the question. You must organise the items given to you or events or characteristics or features etc. in a logical way. You need to group similar this but it depends on the question.
Match	In this question you are given a mixture of items and expected to match them with the corresponding ones. You need to APPLY YOUR KNOWLEDGE IN ORDER TO MATCH THE ITEMS. The starting point is that you must have studied the concepts so that you can match it with a given situation. AN EXAMINER CAN GIVE YOU DIFFERENT PICTURES AND REQUEST YOU TO MATCH THEM TO GIVEN PROCESS. The examiner can give definitions and statements and request you to match them.
Illustrate	In this question you are expected to SHOW CLEARLY HOW SOMETHING HAPPENS OR HOW SOMETHING AFFECTS OTHER THINGS OR HOW PEOPLE DEAL WITH SOMETHING. You must use diagrams or figures or examples where it is necessary. This will strengthen your response.
Use	This is an application question in which you must use your own words or given information to respond. The Examiner usually use this question with source material. The Examiner can say USE the information in the picture to show HOW poverty in rural areas lead to “rural depopulation”.

8.4 Action verbs requiring CRITICAL THINKING

ACTION VERB	EXPECTATION FROM THE CANDIDATE
Analyse	This is high order question but it is not difficult because IT CAN BE ANSWERED IN DIFFERENT WAYS. It needs you to have knowledge and use it to analyse. When you analyse you BREAK SOMETHING (E.G. THE PROCESS OR INFORMATION OR EVENT) INTO PARTS AND DISCUSS EACH PART. You can DESCRIBE EACH PART, DEFINE EACH PART and EXPLAIN HOW EACH PART RELATES TO THE OTHER.
Categorise	This LOOKS LIKE ARRANGEMENT OR CLASSIFYING QUESTION. It differs because YOU MUST CREATE YOUR OWN CATEGORIES OF INFORMATION GIVEN. You need to apply your mind to separate given information into similar or related items. Your knowledge of the subject matter is very important here. The Examiner can say STUDY THE DIAGRAM BELOW AND CATERGORISE FACTORS THAT ARE SHOWN INTO “CENTRIPETAL and CENTRIFUGAL” OF SUB-URBANISATION.
Differentiate	In this question the Examiner wants you to show the difference between certain factors or processes. The only difference is that you must discuss the processes to show their difference. It is unlike a question which says WHAT IS THE DIFEERENCE? In such a question you mention the difference. In the question which says DIFFEENTATE BETWEEN TWO PROCESSES, you must show the differences based on your understanding.
Examine	In this question the Examiner wants you to look at what has been given and evaluate it. This is an open-ended question because you can define the item given or look at its advantages and disadvantages etc. An Examiner can say EXAMINE THE POLITICAL CONSEQUENCES OF THE 1976 UPRISINGS IN SOWETO. Here you must understand these uprisings from the start to end and evaluate them from a historical point of view. The Examiner can also say IN YOUR OPINION, WOULD YOU REGARD THE RDP HOUSING SCHEME AS A SOLUTION TO URBAN POVERTY. In this question you must provide your own evaluation of the scheme.
Propose	This is not an easy question because you must THINK OUT OF THE BOX. It only means that you suggest or propose a solution. The Examiner can give you a scenario and request that you propose a solution for it. An Examiner can GIVE YOU A PICTURE SHOWING THE BUSINESSES WHICH HAVE CLOSED IN THE CITY AND ASK YOU TO PROPOSE A SOLUTION TO THE PROBLEM.

8.5 Common QUESTION PROMPTS

PROMPT	EXPECTATION FROM THE CANDIDATE
How?	This may look easy but it is not simple. THE EXAMINER WANTS YOU TO EXPLAIN HOW A PROCESS OR EVENT OR A PROBLEM CAME ABOUT. It is a question in which you explain HOW something happens e.g. HOW DOES INVESTOR CONFIDENCE PROMOTE ECONOMIC GROWTH? Here you must focus on the way economic growth and investor confidence are positively and negatively related.
When?	This is a simple question which WANTS YOU TO STATE THE TIME OR THE STAGE IN A PROCESS. The question can be WHEN DID SOUTH AFRICA DECLARE THE COVID-19 STATE OF DISASTER? Or WHEN DOES THE TROPICAL STORM DISCCIPATE? In other words, this question can be asked as a lower order question or a higher order question.
What?	This question looks easy and it can be so. However, the question can come with difficult expectations. A question can be IN YOUR OPINION WHAT WERE THE WEAKNESSES AND STRENGTHS IN THE IMPLEMENTATION OF THE ECONOMIC DEVELOPMENT STRATEGY OF THE COUNTRY?
Why?	THIS IS ANOTHER KNOWLEDGE QUESTION. The Examiner may decide to use the word “WHY” instead of using “GIVE REASONS”. Therefore, the why question is always about reasons. It can require a one sentence answer or a discussion.
Which?	This is not as easy as it sounds. THE QUESTION CAN BE MIXED WITH ANOTHER DETAIL. The question can be WHICH OF THE FOLLOWING STATEMENTS ARE NOT TRUE? OR WHICH OF THE FOLLOWING STATEMENTS ARE TRUE? These are simplest questions. However, the question can be WHICH WERE THE MAJOR CHALLENGES OF THE BLACK ECONOMIC EMPOWERMENT INTERVENTIONS IN SOUTH AFRICA INTRODUCED AFTER 1994? Here you are expected to discuss the challenges but the action verb is not “DISCUSS”. As a candidate you must be careful about the “WHICH” in a question.
Who?	This question action verb can be in the middle of the question. A question can be: DESCRIBE THE SUCCESS ELEMENTS OF THE SOUTH AFRICAN STRUGGLE FOR LIBERATION AND INCLUDE THE NAMES OF THE LEADERS WHO CONTRIBUTED TO ITS SUCCESS AND THEIR POLITICAL ORGANISATIONS.

9. Answering common types of questions

Each paper has short questions and long questions. Short questions will need less time to answer than long questions. Short questions may come in the form of one-word response questions and paragraph questions. Short questions can come in the form of true or false, matching items, multiple choice, sentence completion etc. You must know how to answer the following types of questions:

- e. MUTLIPLE CHOICE QUESTIONS
- f. TRUE or FALSE QUESTIONS
- g. MATCHING QUESTIONS
- h. COMPLETION QUESTIONS
- i. SHORT QUESTIONS
- j. PARAGRAPH QUESTIONS
- k. SOURCE BASED QUESTIONS
- l. ESSAT TYPE QUESTIONS
- m. CALCULATION QUESTIONS

9.1 Multiple Choice Questions

These are questions with more than one answers to choose from (usually five or less). Some of the multiple-choice questions have one correct answer to select (single select questions) and some have

more than one answers to select (multi select questions). The anatomy of a multiple-choice question is very important for you in the National Senior Certificate Examinations. The STEM is a question itself. It can be about a definition, a process, a product or a label of a sketch. The choices are divided into two:

- The correct answer must be relevant to the stem. Sometimes it has qualifiers using “some”, “sometimes”, “always” etc.
- The distracters are incorrect answers which are there to distract the you and test the extent of knowledge or understanding.

The anatomy of a multiple-choice question is as follows:

Question: A product of 3+4+2+19 is _____ (STEM)

- a. 22 (DISTRACTER)
- b. 35 (DISTRACTER)
- c. 29 (DISTRACTER)
- d. 28 (CORECT ANSWER)
- e. 33 (DISTRACTER)

The anatomy of a multiple-choice question shows that the majority of answers are distracters and there is only one answer. It is important that you know the subject content.

9.1.1 Single Select Multiple Choice Questions

In these multiple-choice questions, you are asked to pick only one correct answer. These are the most common types of questions in the National Senior Certificate examination question papers. An example of a single-select multiple-choice questions is:

Question: A leap year has _____ days

- a. 365
- b. 366
- c. 367
- d. 358
- e. 364

9.1.2 Multiple-Select Multiple-Choice Questions

These multiple-choice questions have more than one correct answer. The Examiner gives more than one answers. These are not very common in the National Senior Certificate examination questions. They can be used for high order multiple-choice questions. The trick is that the learner gets all the marks for all correct answers, half marks for one answer and zero marks for all wrong answers. An example of a single-select multiple-choice questions is:

Question: Foreign exchange means -----

- (a) Exchanging goods from one country to another.
- (b) Changing money when tourists come to our country.
- (c) Exchange of the currency of one country for another at current rates.
- (d) A market in which one currency in exchange for another.
- (e) Both (c) and (d)

9.1.3 Method of answering multiple choice questions

The following is a suggested method of answering the multiple-choice questions (single-select and multiple-select).

STEP 1: Spend some seconds on the question (THE STEM) before reading the alternatives answers. You are likely to choose the correct answer if you read the question without being influenced by the alternative answers (choices). Underline the key words in the question (THE STEM).

STEP 2: Predict the correct answer before you look at the choices. As a Learner you are not an empty vessel. You have studied before getting to the examination room. By predicting the correct answers before looking at alternatives, you reduce chances of being distracted by wrong answers.

STEP 3: Check the format of the multiple choices. Check whether the choices require one correct answer (single-select) or two correct answers (multiple-select).

STEP 4: Narrow the Field/Eliminate/Remove distracters one by one. You must use subject knowledge to eliminate the wrong answers. Elimination needs knowledge and comprehension.

STEP 5: You must have a reason to accept the remaining answer. After elimination, you must have reasons to eliminate the wrong answers (distracters). There are weak distracters and strong distracters. A strong distracter is the one which is very close to the correct answer. A weak distracter is the one which is obviously not related to the correct answer. It is less confusing.

STEP 6: Review your answers.

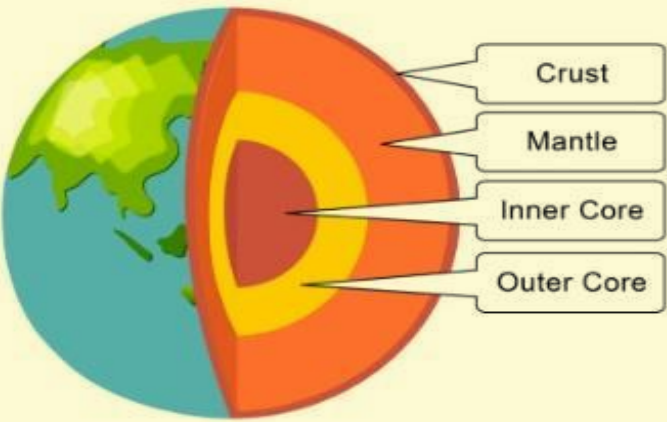
9.2 TRUE or FALSE questions

Unlike multiple choice questions, “TRUE or FALSE” questions only comprise of a statement and two choices (TRUE or FALSE). They are single select because you must choose one of the two (TRUE or FALSE). In these questions’ the Learner is asked to “JUDGE” whether a factual statement is TRUE or FALSE. In these questions something must be considered correct (TRUE) or incorrect (FALSE). They are best suited to assessing low order questions but they can be used to ask medium and higher order thinking questions. However, it is very rare that these questions are used are used for higher order thinking questions. These questions must not be confused with “YES or NO” items.

The TRUE or FALSE questions can be simple or complex depending on the cognitive level/s being assessed. The National Senior Certificate examination uses simple “TRUE or FALSE” questions. There are arguments that the “TRUE or FALSE” questions are very easy but they can be pitched to a higher level depending on the intentions of the Examiner. Although they are easy to set and mark, do not be surprised if they are used to create low order, medium order and high order question items. In some cases, TRUE or FALSE questions go alone and at times Examiners use them together with sources making them “source based”.

9.2.1 Example of a TRUE or FALSE question

Question: Study the diagram showing the structure of the earth and state whether the following statements are “TRUE or FALSE”. Do not re-write the statement, only write the letter of the question and your choice/judgement, e.g. (a) – TRUE.



Source: Taylormoney28

9.2.2 Answering a “TRUE OR FALSE” question”?

STEP 1: Read the whole question carefully. You must remember that if any part of the statement is false, the entire statement is false. It makes the entire statement to be “FALSE”.

STEP 2: Check the qualifiers. Examiners sometimes use qualifiers in the TRUE or FALSE questions to distract you. Qualifiers are words like NEVER, NOT, ALL, NONE, ONLY, ALWAYS et cetera.

STEP 3: Do not waste time in questions that you doubt. Answer the questions that you know first. You may find that answers to question that you do not remember in other questions. Come back to doubtful questions later. In a TRUE/FALSE question, most of the statements are true because teachers have taught what is true and learners are familiar with true and correct knowledge. THIS IS NOT ALWAYS THE CASE.

The only trick is that learners must be able to differentiate between the true and false information. This needs them to be well prepared. Be careful, some statements start with the ‘true part’ (correct part) and end with the ‘false part’ (incorrect part) and therefore become false. It is important to read the whole statement.

9.3 The “matching-column” questions

These are questions which require you to match a series of stems or premises or processes or principle to a response. You are provided with information to connect a word, sentence or phrase in one column to a corresponding word, sentence or phrase in the second column. The items in the first column are called PREMISES and the answers in the second column are called RESPONSES. This arrangement is not a hard and fast rule. Sometimes the first column has statements and the second one has concepts. Sometimes the first column has concepts and the second one has statements.

9.3.1 Example of a matching question

Question: Match the statements in Column A with the concepts in Column B. Do not rewrite the statements in Column A and the matching responses in Column B. Write only the number of the item in Column A and next to it, the letter of the matching answer in Column B e.g. 1-(a).

COLUMN A	COLUMN B
1. Energy that cannot be converted to other forms of energy.	(a) Friction
2. The entropy of a closed system can never decrease	(b) Isostasy
3. The change in energy from one form to another	(c) Coriolis effect
4. A force resisting the relative motion of solid surfaces, fluid layers and material elements sliding against each other	(d) Thermal energy
5. The inertial force that acts on objects that are in motion within a frame of reference that rotates with respect to an internal frame	(e) Gravitational force
	(f) Second law of thermodynamics
	(g) Energy transformation

9.3.2 Answering matching question

STEP 1: Read the instruction carefully. In the example above, the Examiner wants you to write only the number of the item in Column A and next to it, write the letter of the matching answer in Column B. Writing the whole sentences will cost you time.

STEP 2: Read Column A carefully before reading Column B and quickly analyse each of the items. In our example, Column A contains the statements and Column B contains the possible matching answers. You must read each question (and answer it) before reading the possible answers.

STEP 3: Choose the correct answer through elimination. Remember that in “matching questions” there are also strong and weak distracters. In our example above, the question has 5 correct answers and 2 distracters. You must first read the first question; eliminate the wrong answers until you remain with one most possible answer.

STEP 4: Review your answer. If you have enough time to review, they can change answers where they have a good justification to change.

9.4 The “completion” or “Fill-in” questions

In these questions Examiners expects you to insert short answers such as a word or a sentence or a definition in a paragraph or a sentence. They test the depth of knowledge of the subject content and the understanding of it. The given blank space represents a word, a number, a symbol, or a phase which the Examiner/Assessor left out on purpose. You are required to fill in the missing item. The purpose of these questions is to measure specific knowledge in a manner that reduce guessing. These questions have less scope for guessing and therefore need a well-prepared Learner.

9.4.1 Answering “completion or Fill-in”

STEP 1: Carefully and quickly read the title and the text. Link it with what you have studies.

STEP 2: Check the instruction for answering the question.

- STEP 3: Use your knowledge to find missing words which the Examiner expect you to fill in.
- STEP 4: Use your pencil to add the missing words in the spaces in the text and read each sentence.
- STEP 5: Read the sentences re-check if they make correct sense.
- STEP 6: Transfer the missing words into your answer book as pe the instruction of the Examiners.

9.4.2 Example of a “Completion question”

Question: Read the following paragraph about the first democratic elections in South Africa and fill in the missing words. Do not write the whole paragraph. Just write the letter of the missing word and the missing word e.g. (i) 27 March.

THE FIRST DEMOCRATIC ELECTIONS IN SOUTH AFRICA

The first democratic general elections were held in South Africa between on (i) -----
--1994. The elections were the first in which citizens of all races were allowed to take part, and
were therefore also the first held with universal suffrage. The election was conducted under
the direction of the (ii)-----, and marked the
culmination of the process that ended apartheid. Millions queued in lines over a four-day voting
period. Altogether, 19,726,579 votes were counted, and 193,081 were rejected as invalid. As
widely expected, the (iii) -----, whose
slate incorporated the labour confederation COSATU and the South African Communist Party,
won a sweeping victory, taking (iv)-----percent of the vote, just short of the two-thirds
majority required to unilaterally amend the Interim Constitution. This led to the election of (v)---
----- as the first president of a democratic South Africa.

9.5 Short answer questions

These are questions which require learners to construct a response. Here learners are required to be concise, to-the-point and focused. The National Senior Certificate Examiners use short answer questions to check the understanding of concepts. As the name suggests (SHORT ANSWER QUESTIONS), they require a concise and focused response from learners. The answer can be a definition or a judgement or a fact or a reason, or an opinion etc. A short question can be source based (graph or table, or picture or an extract etc).

9.5.1 Example of a short answer question

This example question is adapted from a November 2022 Agricultural Management Practices paper. The Examiner starts by giving background to the issue and ask a short question from the learner. “A farmer wants to expand his/her existing production enterprise by adding a processing plant. The farmer will start this as a small business and if it is successful, she would like to grow this project into a large business”.

Question: Suggest one thing that the farmer can do to acquire practical experience that would give the project a better chance of succeeding (2).

NOTE: This question requires a short suggestion. There is no discussion and marks indicate that the answer must be short.

9.5.2 The challenge with short questions

The main challenge in these questions is that learners tend to write too much and some of them end up giving answers which are not required. Another important thing about the short answer question is that they want learners to apply their knowledge to answer the question. In our example the examiner assumes that you have been taught about ways in which a new farming project can be started. They need to apply that knowledge in the context of plan processing. You must avoid the temptation of writing more than required in these questions and must be guided by marks.

9.6 Paragraph questions

In paragraph questions the Examiner expects the you to respond in a paragraph. The main difference between a paragraph and an essay is that the paragraph answer consists of few sentences (5-10) and it does not need an introduction and a conclusion. In a paragraph answer you must go straight to the answer. It is recommended that a paragraph must be 5 sentences (minimum) to 10 sentences (maximum). Sometimes learners wrongfully write paragraphs which are too long and waste time which must be used for other questions. Sometimes Examiners assist by giving the number of words that the required paragraph must have e.g. 100 – 200 words. This means that a response to a paragraph question must be “straight to the point”. There is no time for information which does not answer the question.

9.6.1 Example: “paragraph” question

This question was adapted from a November 2021 History Paper 2. The Examiner based a question on a given source.

Question: using the information in the relevant sources and your own knowledge, write a paragraph of 8 lines-10 lines (about 80-100 words) explaining how the united democratic front (UDF) responded to the apartheid reforms introduced by P.W. Botha in 1983 (10).

The most important skills required in a paragraph question is that of “Summarising”. If you look at this question, it is clear that the information about the response of the United Democratic Front to the Apartheid Reforms introduced is more than a paragraph but the candidate must summarise it in 8lines -10 lines. It is not good to write the whole page when the Examiner wants a paragraph. If the learner writes the whole page, then time for answering other questions will be wasted.

9.7 Source based questions

Source based are questions on a source of information. The answers to these questions are found from the given source or material. Source based questions usually require learners to define, quote, suggest, list etc. In the NSC Examinations common sources are tables or charts, graphs (bar graphs and line graphs) pie charts, extracts and pictures. The following discussion unpacks the various types of questions. It is very important that Learners understand these sources before the start of the 2025 NSC examinations. There are four common steps for answering all source-based questions. However, they differ in terms of the sources and what the Examiners want you to do.

9.7.1 Method of answering source-based questions

- STEP 1: Read the given source carefully and identify its main points or contents or message of aspect of life or aspect of the subject.
- STEP 2: Create your own interpretation of the source and link it to a particular part of what you have studies.

STEP 3: Read the questions based on the given source carefully linking them to what you noted when you were reading the source.

STEP 4: Start answering the questions using evidence from the given source. Where possible cite the words from the source.

STEP 5: Check and confirm your answers against the given source. You do this by reading your answer again.

Please note: In most cases the source-based questions range from lower to higher cognitive demand. The following discussion will focus on questions asked from various sources such as tables, graphs, charts, pictures, extracts etc.

9.7.2 Questions based on a “table or chart”

Some of the questions in the National Senior Certificate examination are based on tables. Tables are a common for presenting large amounts of information in a short form so that it can be easily understood. You must be trained so that they can interpret any table. When examiners ask questions based on tables, they want you to apply knowledge. A table has a TITTLE, HEADERS, ROWS and COLUMNS as will be shown. The skill of answering source-based questions is necessary because Examiners have mentioned that many learners fail to respond to questions based on tables.

The TITLE helps the learner to know what information is contained in the table. In the National Senior Certificate Examination, the title is related to the work that has been studied. The title is part of the curriculum and it directly or indirectly tests what is in the subject. In our example the title is POPULATION OF SOUTH AFRICA. The COLUMNS are used to arrange information that is being shown vertically. They run from top to bottom. In our example above, the columns show the province, its population and its percentage of the population. A table can have two or three columns depending on the information which the Examiner wants to show.

POPULATION OF SOUTH AFRICA 2022		
PROVINCE	POPULATION	% POPULATION
EASTERN CAPE	6 676 691	11,4
FREE STATE	1 308 734	2,2
GAUTENG	16 098 571	27,5
KWAZULU NATAL	11 538 325	19,7
MPUMALANGA	4 220 497	7,2
NORTH WEST	4 186 984	7,2
NORTHERN CAPE	1 306 227	2,2
WESTERN CAPE	7 211 142	12,3
TOTAL	51 277 468	100

The HEADER/HEADING appear in columns and they specify what each column contains. Headings show the information which the Examiners wants to use to ask questions. In our example the headings are PROVINCE, POPULATION and % POPULATION. The ROWS of a table are used to arrange information that is being shown horizontally. Rows arrange information from left to right in most cases. They are used to bifurcate (divide into cells) information. In our example there are 9 rows under each header. Each row shows the province, its population and percentage of its population in South Africa.

9.7.2.1 Method of answering a “table-based question”

- STEP 1: Quickly read the table (title, columns, headers and values). The tittle is very important because it gives an idea of what the table is about.
- STEP 2: Check the values of the headers before starting to answer the questions.
- STEP 3: Read each question and then identify the information from the table which will help you to answer the questions.
- STEP 4: Go to the next question and do the same as you have done in step 3 until you finish answer.

Always check your answer to make sure that it is accurate and complete. This is very important because the question involves the use of numbers. In most cases learners write wrong numbers and base their answer in them. Once wrong numbers are used, the candidates lose marks.

9.7.2.2 Example of a Table based question

Carefully study the table below showing the POPULATION AND LAND AREA OF SOUTH AFRICA IN 2022 and answer the questions that follow.

POPULATION AND LAND SIZE OF SOUTH AFRICA				
PROVINCES	POPULATION SIZE	% POPULATION	LAND SIZE (KM squares)	% LAND AREA
EASTERN CAPE	6 702 346	11,10%	168 966	13,80%
FREE STATE	2 939 579	4,80%	129 825	10,60%
GAUTENG	16 092 474	26,50%	18 178	1,50%
KWAZULU NATAL	11 541 670	19,00%	94 361	7,70%
LIMPOPO	5 911 362	9,80%	125 755	10,30%
MPUMALANGA	4 755 159	7,80%	79 495	6,50%
NORTH WEST	4 132 915	6,80%	104 882	8,60%

NORTHERN CAPE	1 306 227	2,20%	372 889	30,50%
WESTERN CAPE	7 243 208	11,90%	129 825	10,60%
SOUTH AFRICA	60 624 940	100%	1 224 176	100%

- i.

What was the population of South Africa in 2022? (1)
- ii.

Which province had the lowest population percentage? (1)
- iii.

List five factors responsible for the low population numbers in the province mentioned in (ii) above. (5)
- iv.

KwaZulu Natal and Gauteng have lower land areas and highest population sizes. In a paragraph (10-15 lines) explain for this. (10)
- v.

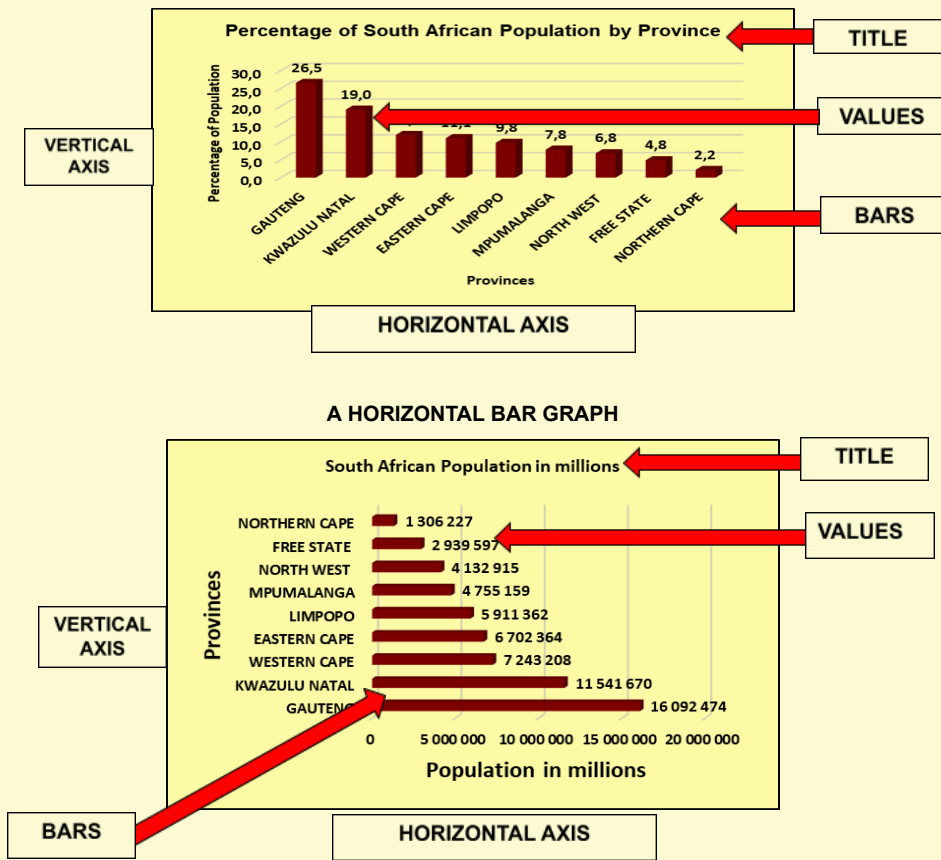
Gauteng will soon reach a stage of overpopulation. List three solutions that South Africa can use to avoid this possible problem. (6)

9.7.3. Questions based on bar graphs

Sometimes National Senior Certificate Examiners ask questions based on a bar graph. A bar graph is used to present data by categories of BARS hence the name “BAR GRAPH”. Bar graphs are also used to show comparison between certain things and there are two types. The first one is called a vertical I bar graph. This is a bar graph in which the “bars” are plotted vertically along the vertical axis (Y-axis). The second type is a called a horizontal bar graph. This is a bar graph in which the “bars” are plotted horizontally along the vertical axis (X-axis). The characteristics of the horizontal bar graph are the same as those of a vertical bar graph. The main difference is that the “bars” are presented in horizontally.

9.7.3.1 Anatomy of a Bar Graph

A bar graph has a TITLE which shows what the bar graph is about. The title is very important because it tells the learner the part of work that the Examiner is testing. The bar graph has BARS which represent information. Each bar has a value written in numbers or percentages or any other unit of measurement. The bar graph has VALUES which are shown by numbers and bars. The higher the value, the higher the bar. The lower the value, the lower the bar. The bar graph has a HORIZOTAL AXIS which represent in formation in a horizontal line. The bar graph has a VERTICAL AXIS which represent in formation in a vertical line. Bar graphs can be used in all the content subjects of the National Curriculum Statement.



- i.

Which gender had the highest percentage enrolment in secondary schools in the world? (1)
- ii.

Which region had the highest percentage enrolment males and females in the world? (1)
- iii.

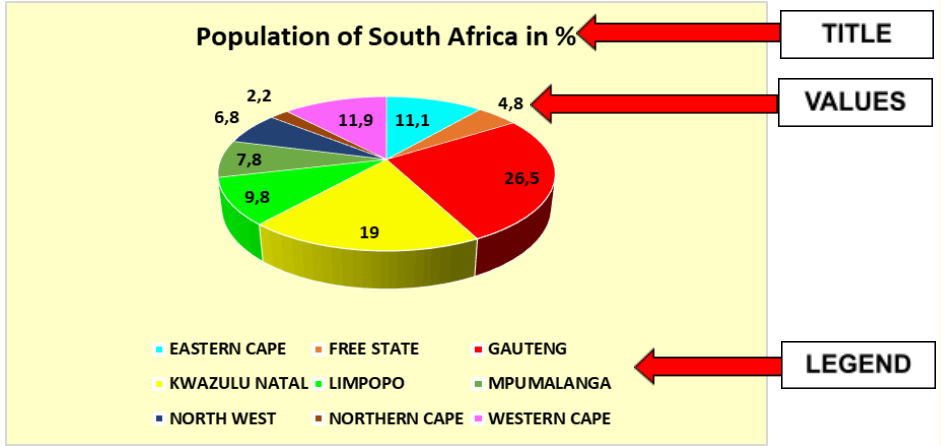
Which of the regions has less obstacles against the education of girls? (1)
- iv.

Give a reason (from the line graph), to support your answer in (iii) above. (3)
- v.

Name three other strategies which the world can use to increase the percentage of secondary school enrolment for girl children? (6)

9.7.5 Questions based on a pie chart

Sometimes the Examiners in the National Senior Certificate Examination use “Pie Chart” or “Pie Graph” as a source of questions. The pie chart consists of a CIRCLE or PIE” which represent information. Normally pie charts are used to present proportions of various things. Pie charts can show information in percentage, numbers, rands etc. depending on what the compiler wants to show. A pie chart contains three parts. The first one is a HEADING which shows the subject or topic being represented in the chart. The second one is the LEGEND/KEY which shows the distribution of colors i.e. what each color represents. The VALUES are the last one. It shows what colors represent.



9.7.5.1 Method of answering questions based on a pie chart

STEP 1: The first step is to Identify and read the title of the pie chart because it tells you what the chart is about. It tells you which aspect of your work the question is testing.

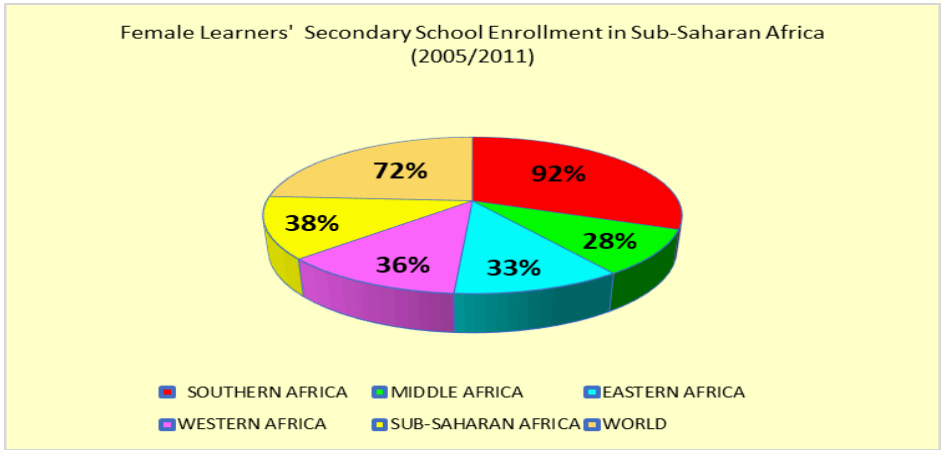
STEP 2: Identify the values of the pie chart because they tell you what each slice of the pie represents. In our example the values are shown in percentage. However, there is no symbol of percentage. The reason for this is that the title of the pie chart has already stated that the population is given in percentages. This is one of the reasons for you to understand the title of the pie chart so that you answer the questions using the correct unit of expression.

STEP 3: Now that you have an understanding of the pie chart, you can read the questions and start answering.

PLEASE NOTE: You must Always check the numbers which you used to answer the questions. If the information is shown in percentage, then you must answer in percentage. If the information is shown in rands you must answer in rands etc. This is very important because the question involves the use of numbers. In most cases learners write wrong numbers when they answer questions.

9.7.5.2 Example of a Pie Chart based question

Study the pie chart below showing the Female Learners' Secondary School Enrolment in Sub-Saharan Africa (2005/2011) and answer the questions which follow.



- a.

Why is education important for females in Africa?
- b.

Which region was leading in the secondary school enrolment for female learners? (1)
- c.

Which region has the lowest percentage of secondary school female learners? (1)
- d.

List three possible reasons which are likely to contribute to the low enrolment of female learners in secondary schools at the region you mentioned in (c) above? (6)
- e.

List three measures that can be taken to improve the enrolment of female learners in secondary schools at the region you mentioned in (c) above.? (6)

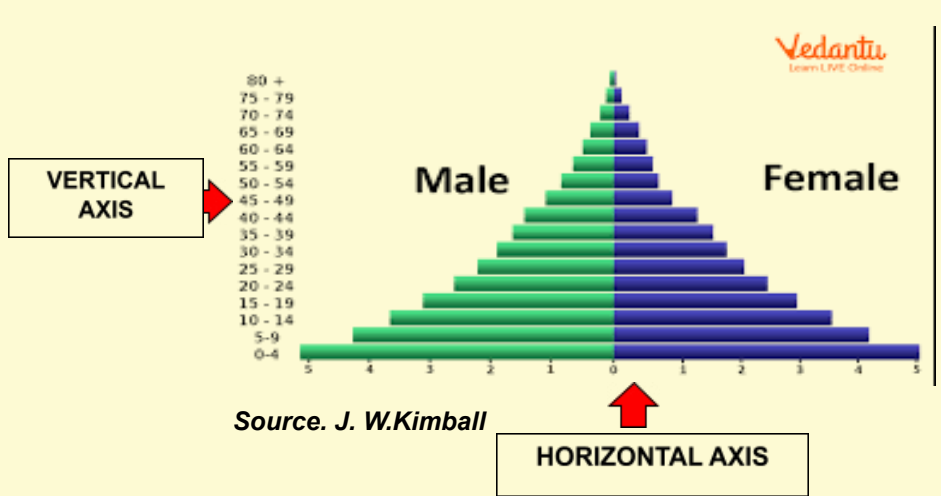
9.7.6 Questions based on the age-sex pyramid

Sometimes Examiners in the NSC examination use an AGE-SEX PYRAMID or a POPULATION PYRAMID or an AGE STRUCTURE or a POPULATION AGE-SEX DISTRIBUTION when asking questions. An age-sex pyramid is a graph which shows the numbers or percentages of males and females in each age group of the population.

The pyramid is divided into two halves i.e. the MALE HALF and the FEMALE HALF. It also consists of BARS which represent each age group. The youngest age is at the bottom and the oldest age is at the top. The width of each bar represents the number or the percentage of people in a particular age group.

If the base of the pyramid is very wide, it means that the “Birth Rate” of the population is high. If the top of the population is wide, it means that the “Life Expectancy” of the population is high. In some cases, the Examiners will ask questions based on two age-sex pyramids. An age sex pyramid has a vertical axis and a horizontal axis. The vertical axis shows the AGE GROUPS.

The horizontal axis shows the POPULATION NUMBERS or POPULATION PERCENTAGES. An age sex pyramid of a developed country is different from that of a developing country.



9.7.6.1 Answering age-sex pyramid-based questions

STEP 1: Identify the title of the pyramid so that you know the part of the content that is being tested. In other words, the title will tell you what the graph is about.

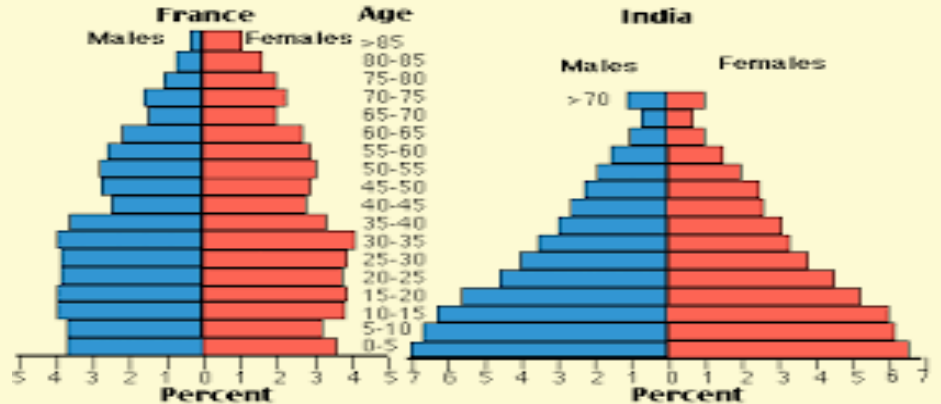
STEP 2: Read the vertical and horizontal axis so that you know what each represent. This is important because you must be able to use information from the vertical axis and the horizontal axis to answer the questions.

STEP 3: Quickly read the values. Look at the width of each bar because it represents the number or percentage that it represents. Therefore, the values assist you to answer the questions. In other words, understand the relationship between the vertical and horizontal scales.

PLEASE NOTE: in questions where you are expected to use numbers from the pyramid in your answer, be accurate in taking them (numbers) from the graph. If you make a mistake in writing numbers from the graph, your answer will be incorrect.

9.7.6.2 An example of a question based on a pyramid

Study the two age-sex pyramids below showing the population structures of France and India and answer the questions that follow.:



Source: J.W. Kimball

- i.

Which of the two countries has a higher birth rate? (1)
- ii.

Give a reason for your answer in (i) above. (2)
- iii.

Which of the two countries has a lower life expectancy? (1)
- iv.

Give a reason for your answer in (ii) above. (2)
- v.

Suggest three measures that can be taken to improve the life expectancy of the country you mentioned in (ii) above. (6)
- vi.

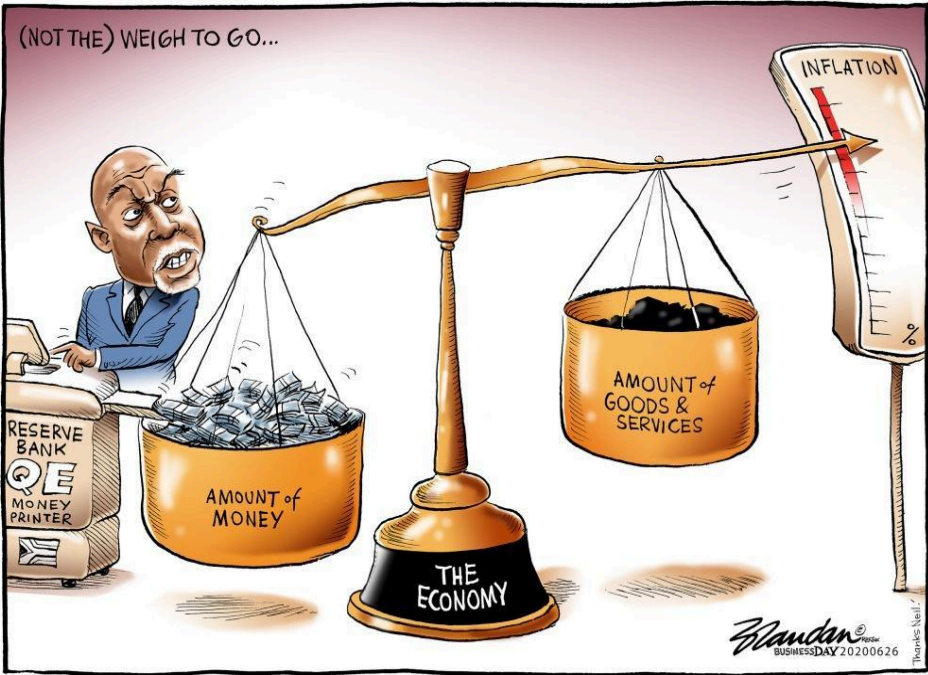
Suggest three measures that can be taken to control the birth rate of a country that you mentioned in (ii) above. (6)
- vii.

Which of the two countries has a largest percentage of Octogenarians? (1)
- viii.

How can education change the situation in India?

9.7.7 Questions based on a cartoon

Sometimes Examiners in the National Senior Certificate Examiners use cartoons when asking questions. A cartoon is a type of animation that typically uses non-realistic or simplified drawings to create a humorous or exaggeration effect. Although cartoons are created for a variety of purposes (entertainment, Education, Advertising etc.), Examiners in the National Senior Certificate Examination use cartoons to ask questions in Economic Management Sciences, Social Sciences and Natural Sciences. Cartoons usually include characters (in our example below the cartoon includes the Minister of Finance Hon. Enock Godongwane). Cartoons may include animals and other objects. Sometimes the cartoon used by the Examiner has a TITLE but sometimes the cartoon has no title. Examiners mostly use cartoons which have relevant information to the subject.



9.7.7.1 Answering a cartoon-based question

- STEP 1:** Study cartoon carefully (its contents and its writings). This will help you to understand what the cartoon is about. In this example, the cartoon is about inflation in South Africa.
- STEP 2:** Read the mood of the cartoon. In our example the cartoon. shows a “Problem”.
- STEP 3:** Read all the questions that the Examiner has asked based on the cartoon. This will help you to know what to look for in the cartoon.
- STEP 4:** You can now start answering the questions. You must also remember that questions are based on the subject content. You must answer the questions using what you have learnt.
- STEP 5:** Check your answers to confirm that they are related to the contents of the cartoon.

9.7.7.2 Example of a cartoon-based question

Study the cartoon below showing the movement of people from Zimbabwe to South Africa and answer the questions that follow.



- What is this movement called in Zimbabwe? (2)
- What is this movement called in South Africa? (2)
- List five possible push factors which are responsible for the movement of people from Zimbabwe. (10)
- List five possible pull factors which are responsible for the movement of Zimbabweans into South Africa Zimbabwe. (10)
- If young people of “working age” leave Zimbabwe, what economic challenges can be created? (2)
- List two social problems associated with the massive movement of Zimbabweans into South. (4).

9.7.8 Questions based on an extract

Extract based questions are those which are based on a paragraph (extract) taken from the story or a poem or a newspaper article etc. Sometimes the National Senior Certificate Examiners use extracts to ask multiple choice questions or paragraph questions and even short essay type questions. When examiners use extracts to ask questions, they use information from the subject content and the extract. Examiners choose extracts for asking application questions and critical thinking questions.

9.7.8.1 Method of answering extract-based questions

- STEP 1:** Read the caption/title of the extract with meaning and link it with your subject matter. The caption or title is very important because it summarizes the main contents of the extract.
- STEP 2:** Read the content of the extract with understanding (with meaning). If you fail to understand the content of the extract, you will fail to answer the questions. Therefore, your success in such questions depends on your understanding of the extract.
- STEP 3:** Read the questions which are based on the extract carefully. You must understand the questions. Failure to understand the questions will lead to failure to answer them. The most important

- thing is that you must read with meaning.
- STEP 4:** Respond the questions asked by the Examiners guided by the marks.
- 9.8.2 Example of a question based on an extract**
- Read the following extract on the effects of crime in South Africa and answer the questions that follow.
- THE ECONOMIC IMPACTS OF CRIME IN SOUTH AFRICA**

The prevalence of a high crime rate ensures the wastage of money from an economic point of view. Some of the most obvious costs of crime have been listed down in this article. The Cost of Running Prisons is a problem. Since South Africa has a lot of violent crime, it also has a lot of people who are incarcerated. This is a double whammy for the government.

An incarcerated person is not productive. As such he/she does not earn for the nation and for the economy. On the other hand, the government has to pay for an incarcerated person. Hence, there is lost revenue, and then there are out of pocket expenses as well. The South African government spends close to \$9 billion on incarceration every year. However, even after spending this huge sum of money it creates more problems than it solves.

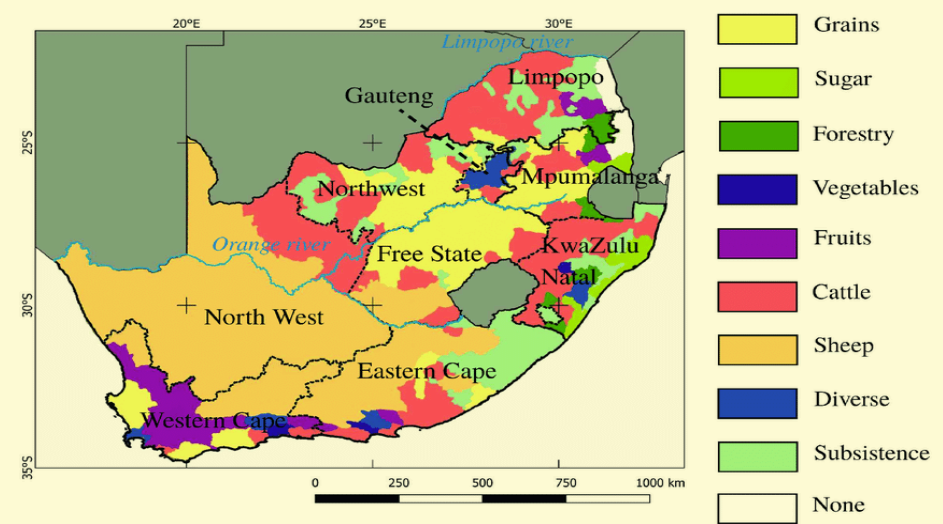
It is a known fact that the South African system is handling at least 20% to 30% more prisoners than it is supposed to. This leads to overcrowding which causes problems such as violence and the spread of infectious diseases amongst criminals. The healthcare cost further adds to the expenses making prisons unviable. *The article was written by Prachi Juneja*

- Name three possible causes of the high crime rate in South Africa. (6)
- If you were given the opportunity to be the President of South Africa, what FOUR measures will you introduce to control the high rate of crime in the country? (8)
- Suggest and list three things that can be done to ensure that sentenced offenders are productive whilst they are incarcerated. (6)
- How does the cost of running prisons affect the ordinary citizens in South Africa (4).
- How does overcrowding in prisons affect the health of inmates and the employees of the Department of Correctional Services (4).

9.7.9. Questions based on a map

Sometimes Examiners in the National Senior Certificate examination use MAPS when asking questions. A map is a symbolic representation of an area. Maps are used for different purposes such as finding location, plans, land use etc. Maps are also used to understand the spatial relationships. Maps are created for various purposes (navigation, land use, environmental management, land use, human activities, spatial distribution of phenomena such as deceases, climatic conditions etc.).

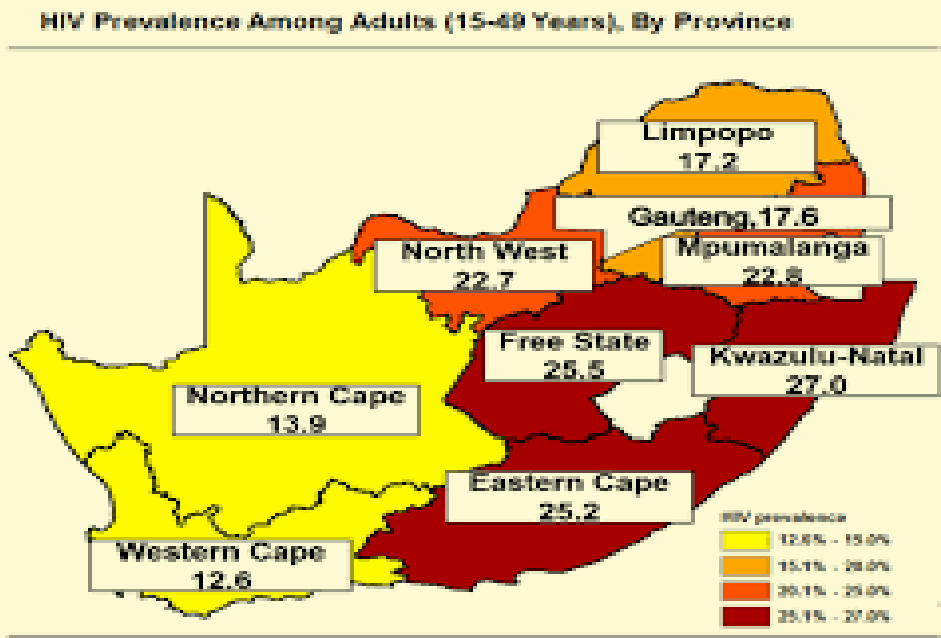
Maps are a complicated representation of information because they mostly have scales. Higher order questions based on maps expect the readers to calculate on basis of the scale. Maps normally have KEY or LEGEND. A map key or a legend is a component of a map which explains the symbols and colors used in a map. You must understand the meaning of symbols or colors used in a map.



9.7.9.1 Answering map-based questions

- STEP 1:** Identify the title of the map (if it has a title) so that you immediately know what the map is about and how it relates to the content that is being tested. In this way you will immediately know how the map is related to the work that you have studied.
- STEP 2:** Read and understand the legend or the key of a map. This is very important because the key tells you about location of features in the map.
- STEP 3:** Quickly read all the questions which are based on the map with understanding.
- STEP 4:** Go back to the questions, now reading them one by one for better understanding.
- STEP 5:** Answer questions using a combination of the map title, map key or legend, map scale (if any) and the map title.
- 9.7.9.2 Example of a question based on a map**

Study the following map showing the prevalence of HIV/AIDS in South Africa (in percentage) and answer the questions that follow.



- Which two provinces have the highest prevalence of HIV/AIDS in South Africa? (2)
- List five reasons why the prevalence of HIV/AIDS is high in the two provinces mentioned in (i) above (5)
- Which two provinces have the lowest percentage prevalence of HIV/AIDS? (2)
- Discuss five measures which can be taken to control the spreading of HIV/AIDS in countries mentioned in (i) above. (10)
- In a paragraph (80 words) explain how the high prevalence of HIV/AIDS can put pressure on:
 - Economy of a country
 - Health system of a country

9.7.10 Questions based on a picture

Sometimes Examiners in the National Senior Certificate examination use pictures when asking questions. A picture is a representation which is made by various means. It can be a photo, a drawing, a sketch etc. Pictures are usually taken from newspapers, magazines, articles, manuals etc. Examiners select pictures showing something related to what has been taught. Sometimes the picture used by the Examiner has a TITLE but sometimes the picture has no title. Examiners mostly use pictures which have relevant information to test content knowledge.



9.7.10.1 Answering questions based on a picture

- STEP 1:** Study the picture carefully (its contents and its writings). This will help you to understand what the picture is about. In this example, the picture is about freedom and democracy.
- STEP 2:** Read the mood of the picture. In our example the picture shows “Demand” which means that the people in the picture are not requesting or asking but they are demanding.
- STEP 3:** Read all the questions that the Examiner has asked. This will help you to know what to look for in the picture. Your eyes must always move between the questions and the picture.
- STEP 4:** During your reading of the picture link its contents to what you have learnt before answering the questions.
- STEP 5:** Start answering questions using the content of the picture.

9.7.10. 2 An example of a picture-based question

Study the picture below showing a residential settlement in one of the cities of South Africa and answer the questions which follow.



Source: Bill Corcoran

- What do we call such settlements? (1)
- List five reasons for the fast spreading of such settlements in South Africa. (5)
- If you were a Minister of Housing in South Africa, what three reforms would you introduce to control the spreading of such settlements.
- You are tasked to lead a team that will address the people of this settlement about pollution and its effects on their lives, which three types of pollution would you focus on? (6).
- Give a reason for focusing on the types of pollution mentioned in (d)

10. The “essay type” question

In essay type questions the Examiner requires the Learner to write an explanation or discussion or analysis or critique or personal understanding of a particular issue or topic or occurrence. The difference between a paragraph question and an essay type question is that the paragraph question has one paragraph but the essay has a number of paragraphs depending on the demands of a question. Essay questions demand good content knowledge and comprehension (understanding). In an essay type question the Learner is allowed to demonstrate knowledge and understanding and is free to express his or her thinking about that knowledge to show understanding. sometimes Examiners of the National Senior Certificate Examination prescribe the length of an essay e.g. 250-350 words or 1 page etc.

10.1 Answering “essay type” question

STEP 1: Read the whole question with understanding or with meaning. This is very important because it will determine the correctness of your answer. If you don’t read the question very well, you will not collect all the marks given by the Examiner. Another important thing about understanding the question is that it will help you to know the scope and the limits of your essay.

STEP 2: Look at the action verb/s words. Sometimes the essay type question comes with one action verb/word (discuss, explain, analyse etc.) and sometimes it comes with two action verbs (compare and differentiate, Discuss critically). The marks in essays are given if you do what the Examiner wants.

STEP 3: Quickly draft/plan your essay in few points that will guide you. You must know how your essay will flow before you start wiring.
Example of a draft/plan to write an essay: Let is say that the question “In an essay of about 400-450 words critically discuss the negative impact the COVID-19 related lockdown in South Africa.
Introduction – Explanation of COVID-19 lockdown

Body Paragraphs

- business
- education
- livelihoods

Conclusion – summary of the main points

STEP 4: Start writing your essay and follow your plan.

PLEASE NOTE: Planning an essay before you write is very important. You write faster because you know what each paragraph must contain. “Don’t think on the essay, implement the plan of your essay”.

10.2 Important things about your answer/response

INTRODUCTION: The introduction of your essay: You must not answer the question in the introduction BUT introduce your argument. Your introductory paragraph must be a “kick paragraph”. It must capture the attention of the Marker. It must start with a “kick sentence” which will impress wet the appetite of a Marker.

BODY PARAGRAPHS: The main text/body of your essay: This must focus on the action verb/words. If the Examiner wants you to EXPLAIN, the whole body of the essay must be used to EXPLAIN. In the body you must write as if the Marker has never heard about what you are writing. The body of your essay carries the largest percentage of marks. In some of content subjects you may include illustrations in the body of your essay.

THE CONCLUSION: The conclusion of your essay: Do not answer the question in the conclusion but tell the Examiner what you have done and argue that you have correctly answered the question. In the conclusion you must summarise what you have done in the body of the essay. In the conclusion you indirectly defend your response.

10.3 Common errors when answering an essay type question

- Failure to write a powerful “kick paragraph” (The first paragraph that captures the interest of the reader).
- Failure to understand the question leading to a wrong presentation of information.
- Ignoring the action verbs causing you to write something that is not expected by the Examiner.
- Writing in point form instead of a narrative form (Listing factors/points etc.) instead of discussing.
- Failure to stick to the question causing the answer to be partly correct and partly incorrect.

Write in paragraphs. Your paragraphs must have complete sentences. The first paragraph must be the introduction of your discussion. The main text must consist of several paragraphs (depending on instruction, marks and content). Do not answer the question in the conclusion, you must close your essay. Your conclusion must be at least one paragraph that summarise what you have covered in your essay.

10.4 The accuracy of information in an essay

In an essay you must not use inaccurate information. There are ways of avoiding the use of inaccurate information. You must always avoid committing yourself to specifics which you are not sure about. If you are in doubt, use data wisely because using inaccurate information may lead to a loss of marks.

It is better to say that the population of South Africa is MORE THAN 50 MILLION than to wrongfully say that it is 54.78million when in actual fact it is 57.78 million (2025).

It is better to say ‘AFTER 1994’ the Government of South Africa introduced the ‘South African Credit Act’ than to wrongfully say ‘In the year 2000 the Government introduced the ‘South African Credit Act’.

If you use statistics or data in your essay, you must be accurate or you can estimate.

11. Calculation questions

These are questions which require that a candidate answer the question by performing a mathematical operation to arrive at the correct answer. Calculation questions are designed to test the ability to add, subtract, divide and multiply accurately (this includes the calculation of percentages). All learners who are studying the Curriculum and Assessment Policy Statements (CAPS), must offer one form of Mathematics (Mathematics or Mathematical Literacy or Technical Mathematics).

In Mathematics, Technical Mathematics and Mathematical Literacy, calculations are not basic but they require the learners to solve Mathematical problems. Therefore, Mathematics, Technical Sciences and Mathematical Literacy papers have 100% of calculation questions. Calculation questions are also asked in other subjects such as Accounting, Geography, Economics, Physical Sciences, Life Sciences, Engineering Graphics and Design, Tourism, Business Studies etc.

11.1 Example of a calculation question

“You are a South African tourist visiting the United States of America. If, on the day of your visit, the exchange rate is 1 US\$ = ZAR 19.50, how much will you pay (in South African Rands) for a pair of sunglasses that cost \$109? Show all your calculations.

THE FOLLOWING THINGS ARE IMPORTANT TIPS ABOUT CALCULATION QUESTIONS:

- a. You must read the question carefully and understand what the Examiner wants you to do.
- b. Sometimes the Examiner instructs you to show all your calculations meaning that there are marks for the steps of calculation.
- c. The examiner may instruct you to write only the correct answer which means that there are no marks for steps of calculation.
- d. You must have a WORKING CALCULATOR.

12. The importance of a answering strategy

A strategy for answering questions means that a Learner STARTS WITH QUESTIONS WHICH YOU CAN ANSWER THE BEST. After that you must go to the SECOND-BEST QUESTIONS and answer them without changing the sequence. THE REASONS FOR STARTING WITH QUESTIONS WHICH YOU CAN ANSWER BETTER THAN OTHERS ARE:

- It boosts your confidence as you are beginning to collect marks at the start.
 - It saves time because you will not spend a lot of time trying to remember the facts. It may increase time for questions which are more challenging.
 - It minimizes errors because you have sufficient facts or information.
 - If your first question is excellent, it may impress the Marker and perhaps rate you with anticipation of a good standard.
 - It may save time for reading your script after completion of the paper.

From the best questions, move to questions which are challenging. Therefore, If it is possible, your last questions to answer MUST BE THOSE WHICH ARE MOST CHALLENGING/DIFFICULT. In these questions you may need more time. This is why it was important to COMPLETE YOUR EASIER QUESTIONS, COLLECT MARKS AND SAVE TIME.

Please note: You are not allowed to start with some parts of the question and then complete the other parts somewhere else. Once you start a question, you must complete it. Do not confuse answering strategy with the breaking of questions. For example, you may not start with question 1 (a), (b) and (c) and then later in your paper you start answering question 1 (d), 1 (e) and 1 (f).

13. The importance of “Time budget”

There is no matric examination paper with duration of less than 1 hour and there is no paper with a duration of more than 3 hours. Papers range between 1.5 hours (90 minutes) and 3 hours (180 minutes). This means that each paper needs “time budgeting”. Budgeting time helps you to complete the question paper and to get reading time.

EXAMPLE 1: A paper has a duration of three (3) hours (180 minutes) with six questions with equal marks. You are asked to choose 4 questions out of six questions. This means that you must calculate the average amount of time to take in each question.

Time budget = No of minutes ÷ number of questions = estimated time per question.

= 180 ÷ 4

= 45 minutes per question

This means that 45 minutes is the maximum time for each question. This formula works if all the questions are allocated equal marks. It is important for you to budget time for each question paper so that in order to cover all sections. You must practice answering questions when studying. This will help you to determine your writing pace and to improve it if there is a need.

EXAMPLE 2: The 2022 Mathematical Literacy paper had 5 questions. The instruction is the learner must ANSWER ALL QUESTIONS.

TOTAL MARKS IS 150 & DURATION IS 3 hours (180 minutes)

QUESTION 1 has 30 marks – $30 \div 150 \times 100 = 20\%$ of 180 min = 36 min

QUESTION 2 has 34 marks – $34 \div 150 \times 100 = 23\%$ of 180 min = 40 min

QUESTION 3 has 24 marks – $24 \div 150 \times 100 = 16\%$ of 180 min = 30 min

QUESTION 4 has 33 marks – $33 \div 150 \times 100 = 22\%$ of 180 min = 40 min

QUESTION 5 has 29 marks – $29 \div 150 \times 100 = 19\%$ of 180 min = 34 min

36 MIN+40MIN+30MIN+40MIN+34MIN = 180 MINUTES

In this Mathematical Literacy paper, the marks are not the same for each question. The time budget for each question must not be the same because the weighting of questions is different.

14. Avoid a TEMPTATION of copying

THERE IS NO SHORTCUT TO PASSING EXAMINATIONS. The only way is to STUDY HARD AND TO KNOW YOUR WORK BETTER. All other means are unfair means called:

- Examination malpractices
- Examination misconduct
- Academic dishonesty
- Serious (not technical) examination irregularities

All these names mean one thing i.e. dishonesty when writing the National Senior Certificate Examination. It means thatAN INVESTIGATION must be conducted and YOUR RESULTS MUST NOT BE RELEASED with the results of other learners. YOU MUST WAIT UNTIL THE INVESTIGATION IS COMPLETED.

14.1 Serious examination irregularities

- Use of “hard copy” crib notes or “electronic” crib notes.
- Copying from another candidate.
- Allowing another candidate to copy from you.
- Asking the Invigilator to help you with answers.
- Taking answers given to you by the Invigilator or a Teacher.
- Use of the textbook or the subject notebook to find answers.
- Pretending to go toilet in order to find answers from the textbook, notebook or any other source of information.
- Giving another candidate notes or textbook or any other unauthorized material to copy.
- Copying from a cell phone or any electronic device.

14.2 Unauthorised material & Persons in exam room

UNAUTHORISED MATERIAL	UNAUTHORISED PERSONS
- Cell phones - Smart watches - Any electronic material that can take photos - Subject material on walls - Notes storing gadgets - Textbooks, crib notes, study guides, previous question papers, previous test papers - Any other material that can give an opportunity to COPY.	- A person who is not an Invigilator or A Chief Invigilator or a Monitor. - A Teacher who is teaching the subject (e.g. Mathematics) in grade 8, 9, 10, 11 and 12. - A Teacher who is teaching a related subject (e.g. Physical Science, Technical Maths, Maths Lit, Life Science) in grade 8, 9, 10, 11 and 12 - A person who comes to explain the question or instruction which is not clear

PLEASE NOTE: If you are found guilty of copying, your results are declared ‘null and void’ or cancelled. You (not your school) may be sentenced to a minimum of one year or a maximum of three years’ suspension from writing the examination in the Republic of South Africa.

14.3 Important success factors

- Come to the examination venue early for each writing session.
- Set the alarm in your cellphone to wake you up if you doubt.
- Be there at least 20 minutes before time every day.
- Eat and drink water before you leave home or hostel.
- You must not panic because you have studied, keep cool.
- Be confident because you have attended classes and studied.
- Believe in yourself because no one will do this for you.
- Don’t let anyone frighten you about the examination or the subject.
- Have your personal time table (Admission Letter) all the time.
- Declare honesty as one of your principles and pray as per your religion.

15. The question paper is in front of you-What next?

You have ten minutes to read the paper and it is your right. Remind the Invigilator if he/she forgets to give you the reading time. If you come late you will not enjoy this right. Come on time.

Read the cover page of the question paper, it has important information:

The subject being written e.g. MATHEMATICS. It is important to check this because you must confirm that the Invigilator gave you the correct paper. The number of the paper: e.g. PAPER 1. The level of the paper: e.g. English HOME Language PAPER 1 or English FIRST ADDITIONAL Language PAPER 1. The total marks e.g. 150 MARKS. It is important for you to know the total marks of the paper. The duration of the paper e.g. 3 HOURS. The number of pages e.g. This paper consists of 25 pages.

15.1 Open the paper and see what is inside

AFTER THE INVIGILATOR INSTRUCTS YOU TO OPEN THE PAPER:

1. Quickly check the sequence and number of pages (they must not be mixed)
2. Quickly read through the questions and tick those which you are sure about.
3. Roughly write down the formulas/ key words/ reminders.

BEFORE YOU START WRITING YOU MUST DECIDE ON THE FOLLOWING

1. The amount of time you want to spend in each question (based on the number of question and the amount of time).
2. The questions which you will begin with (questions you can answer the best) so that you will be

- faster and save time than in your difficult questions.
3. Number the answers to questions as they are numbered in the question paper.
 4. Underline the action verb in a question (e.g. DISCUSS) to know what the Examiner expects you to do.

15.2 Before you leave the examination room

- Check the spelling in your topics.
- Check your examination number (count the digits in it).
- Check your center number (count the digits in it).
- Check whether you have answered the right questions.
- Read your answers (if there is still time) and correct the spelling.
- Check your answer book (Don't leave anything inside e.g. your admission letter, a ruler, bank notes etc.)
- Do not be intimidated by those who are moving out before time is finished. You don't know why they are leaving earlier.
 - They may be unable to answer all questions.
 - They may be stressed by their performance.
 - They may have given up.
 - They may have checked everything that you have not checked.

BE CAREFUL!!!!!!

You must ensure that you do not leave the examination room with your answer book. This will create a serious problem because your answer book will not be accepted when you want to submit after moving out with it.



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

PHYSICAL SCIENCES: CHEMISTRY (P2)

NOVEMBER 2023

MARKS: 150

TIME: 3 hours

This question paper consists of 16 pages and 4 data sheets.

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INSTRUCTIONS AND INFORMATION

1. Write your centre number and examination number in the appropriate spaces on the ANSWER BOOK.

2. This question paper consists of NINE questions. Answer ALL the questions in the ANSWER BOOK.

3. Start EACH question on a NEW page in the ANSWER BOOK.

4. Number the answers correctly according to the numbering system used in this question paper.

5. Leave ONE line between two subquestions, e.g. between QUESTION 2.1 and QUESTION 2.2.

6. You may use a non-programmable calculator.

7. You may use appropriate mathematical instruments.

8. Show ALL formulae and substitutions in ALL calculations.

9. Round off your FINAL numerical answers to a minimum of TWO decimal places.

10. Give brief motivations, discussions, etc. where required.

11. You are advised to use the attached DATA SHEETS.

12. Write neatly and legibly.

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QUESTION 1: MULTIPLE-CHOICE QUESTIONS

Various options are provided as possible answers to the following questions. Each question has only ONE correct answer. Choose the answer and write only the letter (A–D) next to the question numbers (1.1 to 1.10) in the ANSWER BOOK, e.g. 1.11 E.

1.1

Which ONE of the following represents a straight chain SATURATED hydrocarbon?

A

C₅H₈

B

C₅H₁₀

C

C₆H₁₂

D

C₆H₁₄

(2)

1.2

Which ONE of the following is a SECONDARY alcohol?

A

C(CH₃)₃OH

B

CH₃(CH₂)₃OH

C

CH₃(CH₂)₂CHO

D

CH₃CH₂CH(OH)CH₃

(2)

1.3

Which ONE of the following is a HYDROLYSIS reaction?

A

CH₃CH₂Br + H₂O → CH₃CH₂OH + HBr

B

CH₃CH₂OH + HBr → CH₃CH₂Br + H₂O

C

CH₂CH₂ + H₂O → CH₃CH₂OH

D

CH₂CH₂ + H₂ → CH₃CH₃

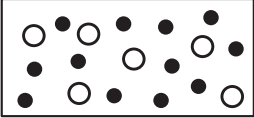
(2)

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1.5

The diagram below represents a mixture of NO₂(g) and N₂O₄(g) molecules at equilibrium in a 1 dm³ container at T °C.



KEY

●

NO₂

○

N₂O₄

The balanced equation for this reaction is:

2NO₂(g) ⇌ N₂O₄(g)

Which ONE of the following is TRUE for the value of the equilibrium constant, K_c, for the reaction at T °C?

A

K_c = 24

B

K_c > 1

C

K_c = 1

D

0 < K_c < 1

(2)

1.6

A reaction is at equilibrium in a closed container according to the following balanced equation:

4CuO(s) ⇌ 2Cu₂O(s) + O₂(g)

The volume of the container is now increased while the temperature remains constant. A new equilibrium is reached.

Which ONE of the following combinations is CORRECT for the new equilibrium?

	CONCENTRATION OF O ₂	NUMBER of MOLES OF O ₂	EQUILIBRIUM CONSTANT (K _c)
A	Decreases	Remains the same	Increases
B	Remains the same	Decreases	Remains the same
C	Remains the same	Increases	Remains the same
D	Decreases	Increases	Remains the same

(2)

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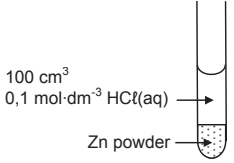
1.4

Hydrochloric acid reacts with EXCESS zinc:

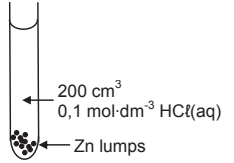
Zn(s) + 2HCl(aq) → ZnCl₂(aq) + H₂(g)

Different reaction conditions are shown in the diagrams below. The mass of zinc used is the same in both test tubes.

Test tube X



Test tube Y



How will the INITIAL rate of reaction and FINAL VOLUME of H₂(g) produced in test tube Y compare with that in test tube X?

	INITIAL RATE OF REACTION IN Y	FINAL VOLUME OF H ₂ (G) IN Y
A	Higher	Equal
B	Lower	More
C	Lower	Equal
D	Higher	More

(2)

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1.7

Nitric acid, HNO₃(aq), and ethanoic acid, CH₃COOH(aq), of equal volumes and concentrations are compared.

Consider the following statements regarding these solutions:

(i)

They have different pH values.

(ii)

Both have the same electrical conductivity.

(iii)

Both solutions require the same number of moles of KOH(aq) for complete neutralisation.

Which of the above statement(s) is/are TRUE?

A

(i) only

B

(i) and (ii) only

C

(i) and (iii) only

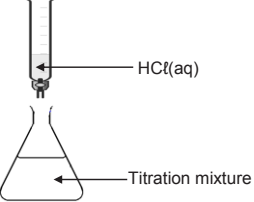
D

(ii) and (iii) only

(2)

1.8

The apparatus in the diagram below is used for the titration between HCl(aq) and KOH(aq).



In a titration, the learner accidentally exceeds the endpoint. Which ONE of the following will be TRUE for the titration mixture?

A

[H⁺] > [OH⁻] and pH < 7

B

[H⁺] < [OH⁻] and pH < 7

C

[H⁺] < [OH⁻] and pH > 7

D

[H⁺] > [OH⁻] and pH > 7

(2)

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QUESTION 2 (Start on a new page.)

The letters **A** to **H** in the table below represent eight organic compounds.

A	Heptanoic acid	B	$\text{CH}_3(\text{CH}_2)_3\text{COOCH}_3$
C	4-ethyl-3,3-difluorohexane	D	Hexanoic acid
E	$\begin{array}{c} \text{CH}_2 \\ \parallel \\ \text{CH}_3-\text{CH}-\text{C}-\text{CH}_3 \\ \\ \text{CH}_3 \end{array}$	F	$\begin{array}{c} \text{O} \\ \parallel \\ \text{CH}_3-\text{CH}-\text{C}-\text{CH}_2-\text{CH}_3 \\ \\ \text{CH}_3 \end{array}$
G	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3-\text{C}-\text{CH}_2-\text{CH}_3 \\ \\ \text{C}=\text{O} \\ \\ \text{H}-\text{O} \end{array}$	H	$\begin{array}{cccc} \text{H} & \text{H} & \text{O} & \text{H} \\ & & & \\ \text{H}-\text{C} & -\text{C} & -\text{C} & -\text{C}-\text{H} \\ & & & \\ \text{H} & \text{H} & & \text{H} \end{array}$

- 2.1 Define the term *organic compound*. (1)
- 2.2 Write down the IUPAC name of compound:

2.2.1 **E** (2)

2.2.2 **H** (2)
- 2.3 Write down the:

2.3.1 STRUCTURAL formula of compound **B** (2)

2.3.2 STRUCTURAL formula of compound **C** (3)

2.3.3 General formula of the homologous series to which compound **E** belongs (1)

2.3.4 STRUCTURAL formula of the FUNCTIONAL group of compound **F** (1)

2.3.5 IUPAC name of the alcohol needed to produce compound **B** (2)
- 2.4 Write down the letter(s) of the compound(s) that:

2.4.1 Is a FUNCTIONAL isomer of compound **G** (1)

2.4.2 Are CHAIN isomers of each other (1)
- [16]

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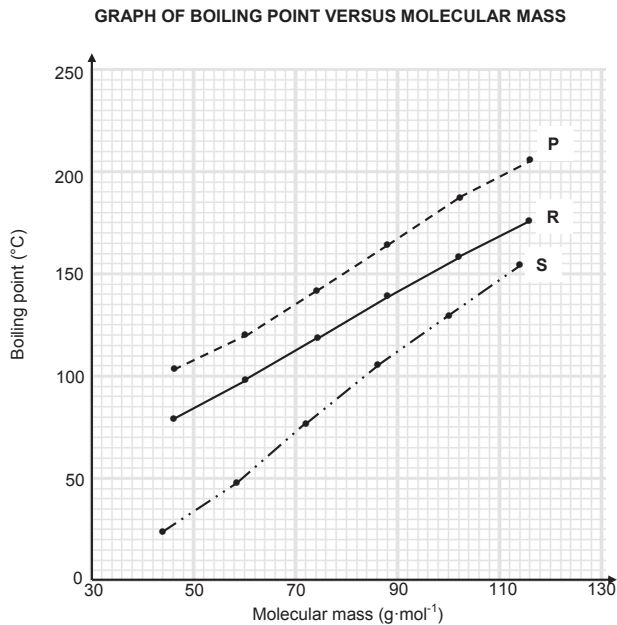
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QUESTION 3 (Start on a new page.)

The relationship between boiling point and the molecular mass of aldehydes, carboxylic acids and primary alcohols is investigated. Curves **P**, **R** and **S** are obtained. All compounds used are straight chain molecules.



- 3.1 Define the term *boiling point*. (2)
- 3.2 Write down the conclusion that can be made for curve **P**. (2)
- 3.3 Explain the answer to QUESTION 3.2 in terms of the structures of the compounds. (2)
- 3.4 Curve **R** represents the alcohols.

3.4.1 Which homologous series is represented by curve **S**? (1)

3.4.2 Explain the answer to QUESTION 3.4.1 by referring to the strength of intermolecular forces. (2)

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QUESTION 2 (Start on a new page.)

The letters **A** to **H** in the table below represent eight organic compounds.

A	Heptanoic acid	B	$\text{CH}_3(\text{CH}_2)_3\text{COOCH}_3$
C	4-ethyl-3,3-difluorohexane	D	Hexanoic acid
E	$\begin{array}{c} \text{CH}_2 \\ \parallel \\ \text{CH}_3-\text{CH}-\text{C}-\text{CH}_3 \\ \\ \text{CH}_3 \end{array}$	F	$\begin{array}{c} \text{O} \\ \parallel \\ \text{CH}_3-\text{CH}-\text{C}-\text{CH}_2-\text{CH}_3 \\ \\ \text{CH}_3 \end{array}$
G	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3-\text{C}-\text{CH}_2-\text{CH}_3 \\ \\ \text{C}=\text{O} \\ \\ \text{H}-\text{O} \end{array}$	H	$\begin{array}{cccc} \text{H} & \text{H} & \text{O} & \text{H} \\ & & & \\ \text{H}-\text{C} & -\text{C} & -\text{C} & -\text{C}-\text{H} \\ & & & \\ \text{H} & \text{H} & & \text{H} \end{array}$

- 2.1 Define the term *organic compound*. (1)
- 2.2 Write down the IUPAC name of compound:

2.2.1 **E** (2)

2.2.2 **H** (2)
- 2.3 Write down the:

2.3.1 STRUCTURAL formula of compound **B** (2)

2.3.2 STRUCTURAL formula of compound **C** (3)

2.3.3 General formula of the homologous series to which compound **E** belongs (1)

2.3.4 STRUCTURAL formula of the FUNCTIONAL group of compound **F** (1)

2.3.5 IUPAC name of the alcohol needed to produce compound **B** (2)
- 2.4 Write down the letter(s) of the compound(s) that:

2.4.1 Is a FUNCTIONAL isomer of compound **G** (1)

2.4.2 Are CHAIN isomers of each other (1)
- [16]

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- 3.5 For curve **R**, write down the:

3.5.1 Molecular mass of the compound with a boiling point of 97 °C (1)

3.5.2 IUPAC name of the compound in QUESTION 3.5.1 (2)
- 3.6 Two compounds, **A** and **B**, used in this investigation have a molecular mass of 74 g·mol⁻¹. **A** has a boiling point of 118 °C and **B** a boiling point of 142 °C. Explain the difference in these boiling points by referring to the structures of these compounds. (3)
- [15]

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QUESTION 4 (Start on a new page.)

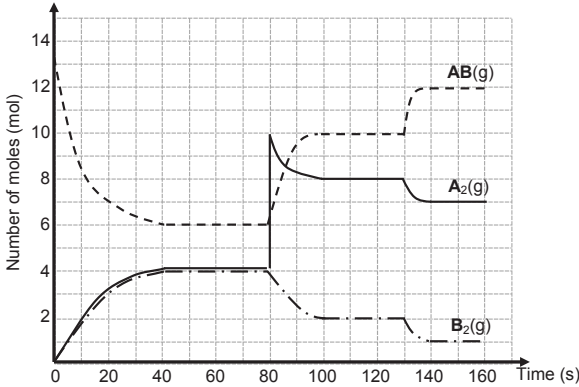
- 4.1 Consider the cracking reaction below.
- $$\text{C}_{16}\text{H}_{34} \longrightarrow \text{C}_6\text{H}_{14} + \text{C}_6\text{H}_x + 2\text{C}_y\text{H}_z$$
- 4.1.1 Define *cracking*. (2)
- 4.1.2 Write down the values represented by **x**, **y** and **z** in the equation above. (3)
- Compound C_6H_{14} undergoes complete combustion.
- 4.1.3 Using MOLECULAR FORMULAE, write down the balanced equation for this reaction. (3)
- 4.2 Consider the equations for reactions I to III below.
- A** and **B** represent organic compounds that are POSITIONAL ISOMERS. **X** is an inorganic product.
- | | |
|-----|---|
| I | $\text{CH}_3\text{CH}_2\text{CHCHCH}_3 + \text{HCl} \rightarrow \text{A} + \text{B}$ |
| II | $\text{A} \xrightarrow[\Delta]{\text{H}_2\text{O}} \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}(\text{OH})\text{CH}_3 + \text{X}$ |
| III | $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}(\text{OH})\text{CH}_3 \longrightarrow \text{CH}_3\text{CH}_2\text{CHCHCH}_3 + \text{H}_2\text{O}$ |
- Write down the:
- 4.2.1 Definition of *positional isomers* (2)
- 4.2.2 Type of reaction represented by reaction I (1)
- 4.2.3 STRUCTURAL formula of compound **B** (3)
- 4.2.4 Formula of **X** (1)
- 4.2.5 Inorganic reagent for reaction III (1)
- Compound **A** can be converted directly to the organic product of reaction III.
- 4.2.6 Besides heat, write down the reaction condition needed for this conversion. (1)
- 4.2.7 Write down TWO terms that describe this type of reaction. (2)
- [19]

QUESTION 6 (Start on a new page.)

Consider the following hypothetical reaction reaching equilibrium in a 4 dm^3 closed container at $150\text{ }^\circ\text{C}$.

$$2\text{AB}(\text{g}) \rightleftharpoons \text{A}_2(\text{g}) + \text{B}_2(\text{g})$$

The graph below shows the changes in the amounts of reactants and products over time.



- 6.1 Write down the meaning of the term *reversible reaction*. (1)
- 6.2 State Le Chatelier's principle. (2)
- 6.3 A change was made to the equilibrium mixture at $t = 80\text{ s}$.
- 6.3.1 Write down the change made at $t = 80\text{ s}$. (1)
- 6.3.2 Use Le Chatelier's principle to explain how the system reacts to this change. (2)
- 6.4 Calculate the equilibrium constant, K_c , at $t = 120\text{ s}$. (4)
- 6.5 At $t = 130\text{ s}$ the temperature of the system is decreased to $100\text{ }^\circ\text{C}$.
- 6.5.1 Draw a potential energy diagram for this reaction. (3)
- 6.5.2 Will the equilibrium constant, K_c , at $100\text{ }^\circ\text{C}$ be GREATER THAN, LESS THAN or EQUAL TO the K_c at $150\text{ }^\circ\text{C}$? Explain the answer. (3)
- 6.6 The initial reaction now takes place in the presence of a catalyst at $150\text{ }^\circ\text{C}$. Describe the changes that will be observed on the graph between $t = 0\text{ s}$ and $t = 60\text{ s}$. (3)
- [19]

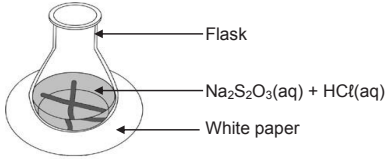
QUESTION 5 (Start on a new page.)

The reaction between EXCESS dilute hydrochloric acid and sodium thiosulphate is used to investigate factors that influence reaction rate.



The concentration of $\text{HCl}(\text{aq})$ used is $1\text{ mol}\cdot\text{dm}^{-3}$. The same volume of $\text{HCl}(\text{aq})$ is used in each run.

The time taken for the cross on the paper under the flask to become invisible is measured.



The table below summarises the reaction conditions and results of the experiment.

RUN	VOLUME $\text{Na}_2\text{S}_2\text{O}_3(\text{aq})$ (cm^3)	VOLUME $\text{H}_2\text{O}(\ell)$ ADDED (cm^3)	CONCENTRATION $\text{Na}_2\text{S}_2\text{O}_3(\text{aq})$ ($\text{mol}\cdot\text{dm}^{-3}$)	TIME (s)
1	50	0	0,13	20,4
2	40	10	0,10	26,7
3	30	20	P	33,3

- 5.1 Define *reaction rate*. (2)
- 5.2 Write down the independent variable for this investigation. (1)
- 5.3 Calculate the value of **P** in the table. (3)
- 5.4 When $0,21\text{ g}$ of sulphur has formed in Run 1, the cross becomes invisible. Calculate the average reaction rate with respect to sodium thiosulphate, $\text{Na}_2\text{S}_2\text{O}_3(\text{aq})$, in $\text{g}\cdot\text{s}^{-1}$. (5)
- Another investigation is performed at different temperatures.
- 5.5 Sketch the Maxwell-Boltzmann distribution curve for the reaction at $20\text{ }^\circ\text{C}$. Label this curve as **A**. On the same set of axis, draw the curve that will be obtained at $35\text{ }^\circ\text{C}$ and label it as **B**. (4)
- 5.6 Explain the effect of temperature on reaction rate in terms of the collision theory. (4)
- [19]

QUESTION 7 (Start on a new page.)

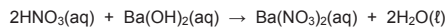
To identify metal **M** in an unknown metal carbonate, MCO_3 , the following procedure is carried out:

Step 1: $0,198\text{ g}$ of IMPURE MCO_3 is reacted with 25 cm^3 of $0,4\text{ mol}\cdot\text{dm}^{-3}$ nitric acid, $\text{HNO}_3(\text{aq})$.

Step 2: The EXCESS $\text{HNO}_3(\text{aq})$ is then neutralised with 20 cm^3 of $0,15\text{ mol}\cdot\text{dm}^{-3}$ barium hydroxide, $\text{Ba}(\text{OH})_2(\text{aq})$.

Assume that the volumes are additive.

The following reactions take place:

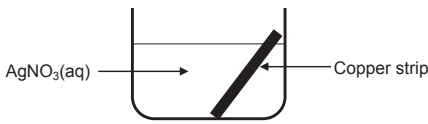


- 7.1 Define the term *strong base*. (2)
- 7.2 Calculate the:
- 7.2.1 Number of moles of $\text{Ba}(\text{OH})_2(\text{aq})$ that reacted with the excess $\text{HNO}_3(\text{aq})$ (3)
- 7.2.2 pH of the solution after Step 1 (5)
- 7.3 The percentage purity of the $\text{MCO}_3(\text{s})$ in the sample is 85% . Identify metal **M**. (8)
- [18]

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QUESTION 8 (Start on a new page.)

A cleaned pure copper strip, Cu(s), is placed in a beaker containing a colourless silver nitrate solution, AgNO₃(aq), at 25 °C, as shown below.



After a while, it is observed that the solution in the beaker becomes blue.

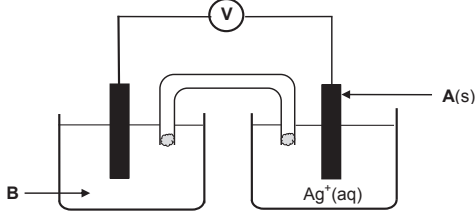
8.1Write down:

8.1.1ONE other OBSERVABLE change, besides the solution turning blue

8.1.2The NAME or FORMULA of the oxidising agent

8.2Explain the answer to QUESTION 8.1.1 by referring to the relative strengths of the oxidising agents or reducing agents.

A galvanic cell is now set up using Cu and Ag strips as electrodes. A simplified diagram of the cell is shown below.



8.3Write down the:

8.3.1NAME or FORMULA of electrode A

8.3.2NAME or FORMULA of solution B

8.3.3Overall (net) balanced equation for the cell reaction

8.4The salt bridge contains potassium nitrate, KNO₃(aq).
Write down the FORMULA of the ion in the salt bridge that will move into the silver ion solution. Choose from K⁺(aq) or NO₃⁻(aq).
Give a reason for the answer.

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DATA FOR PHYSICAL SCIENCES GRADE 12
PAPER 2 (CHEMISTRY)

GEGEWENS VIR FISIESE WETENSKAPPE GRAAD 12
VRAESTEL 2 (CHEMIE)

TABLE 1: PHYSICAL CONSTANTS/TABEL 1: FISIESE KONSTANTES

NAME/NAAM	SYMBOL/SIMBOOL	VALUE/WAARDE
Standard pressure Standaarddruk	p ⁰	1,013 x 10 ⁵ Pa
Molar gas volume at STP Molêre gasvolume by STD	V _m	22,4 dm ³ .mol ⁻¹
Standard temperature Standaardtemperatuur	T ⁰	273 K
Charge on electron Lading op elektron	e	-1,6 x 10 ⁻¹⁹ C
Avogadro's constant Avogadro-konstante	N _A	6,02 x 10 ²³ mol ⁻¹

TABLE 2: FORMULAE/TABEL 2: FORMULES

$n = \frac{m}{M}$	$n = \frac{N}{N_A}$
$c = \frac{n}{V}$ or/of $c = \frac{m}{MV}$	$n = \frac{V}{V_m}$
$\frac{c_a V_a}{c_b V_b} = \frac{n_a}{n_b}$	pH = -log[H ₃ O ⁺]
K _w = [H ₃ O ⁺][OH ⁻] = 1 x 10 ⁻¹⁴ at/by 298 K	
$E^\theta_{\text{cell}} = E^\theta_{\text{cathode}} - E^\theta_{\text{anode}} / E^\theta_{\text{sel}} = E^\theta_{\text{katode}} - E^\theta_{\text{anode}}$ or/of $E^\theta_{\text{cell}} = E^\theta_{\text{reduction}} - E^\theta_{\text{oxidation}} / E^\theta_{\text{sel}} = E^\theta_{\text{reduksie}} - E^\theta_{\text{oksidasie}}$ or/of $E^\theta_{\text{cell}} = E^\theta_{\text{oxidising agent}} - E^\theta_{\text{reducing agent}} / E^\theta_{\text{sel}} = E^\theta_{\text{oksideermiddel}} - E^\theta_{\text{reduseermiddel}}$	
$I = \frac{Q}{\Delta t}$	$n = \frac{Q}{q_e}$ where n is the number of electrons/ waar n die aantal elektrone is

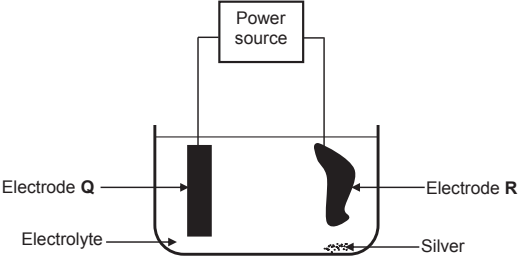
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QUESTION 9 (Start on a new page.)

An electrolytic cell is set up to purify a piece of copper that contains silver and zinc as impurities. A simplified diagram of the cell is shown below. Electrode R is impure copper.



9.1Define the term *electrolysis*.

9.2Write down the reaction taking place at electrode Q.

9.3In which direction do the electrons flow in the external circuit? Choose from Q to R or R to Q.

9.4Calculate the current needed to form 16 g of copper when the cell operates for five hours.

9.5During this electrolysis, only copper and zinc are oxidised.

Give a reason why the silver is not oxidised.

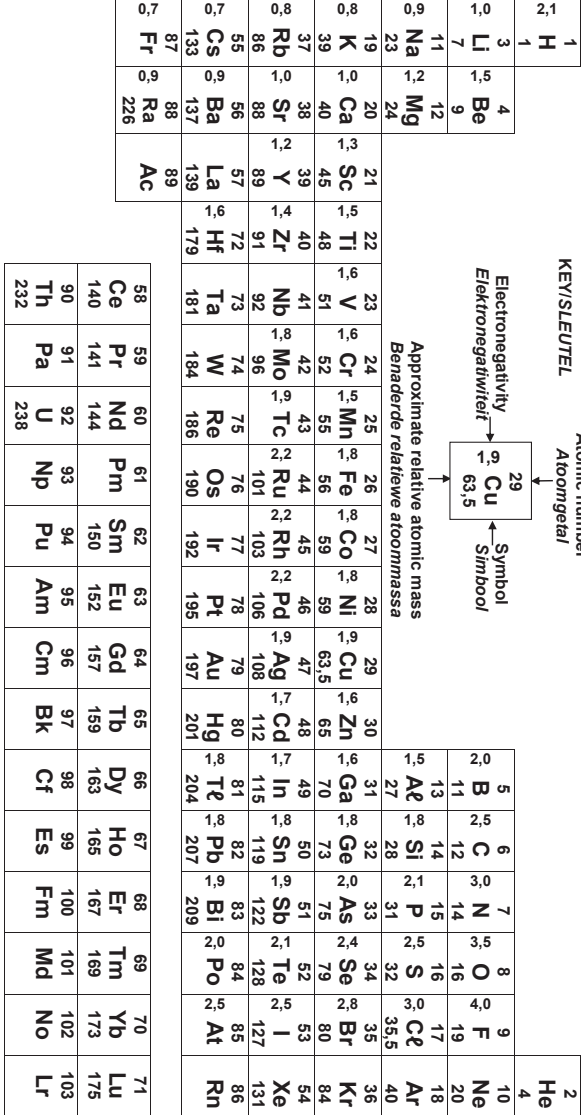
TOTAL: 150

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TABLE 3: THE PERIODIC TABLE OF ELEMENTS
TABEL 3: DIE PERIODIEKE TABEL VAN ELEMENTE



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TABLE 4A: STANDARD REDUCTION POTENTIALS
TABEL 4A: STANDAARD-REDUKSIEPOTENSIALE

↑
Increasing strength of oxidising agents/
Toenemende sterkte van oksideermiddels

Half-reactions/Halfreaksies	E ⁰ (V)
F ₂ (g) + 2e ⁻ ⇌ 2F ⁻	+ 2,87
Co ³⁺ + e ⁻ ⇌ Co ²⁺	+ 1,81
H ₂ O ₂ + 2H ⁺ + 2e ⁻ ⇌ 2H ₂ O	+ 1,77
MnO ₄ ⁻ + 8H ⁺ + 5e ⁻ ⇌ Mn ²⁺ + 4H ₂ O	+ 1,51
Cl ₂ (g) + 2e ⁻ ⇌ 2Cl ⁻	+ 1,36
Cr ₂ O ₇ ²⁻ + 14H ⁺ + 6e ⁻ ⇌ 2Cr ³⁺ + 7H ₂ O	+ 1,33
O ₂ (g) + 4H ⁺ + 4e ⁻ ⇌ 2H ₂ O	+ 1,23
MnO ₂ + 4H ⁺ + 2e ⁻ ⇌ Mn ²⁺ + 2H ₂ O	+ 1,23
Pt ²⁺ + 2e ⁻ ⇌ Pt	+ 1,20
Br ₂ (l) + 2e ⁻ ⇌ 2Br ⁻	+ 1,07
NO ₃ ⁻ + 4H ⁺ + 3e ⁻ ⇌ NO(g) + 2H ₂ O	+ 0,96
Hg ₂ ²⁺ + 2e ⁻ ⇌ 2Hg(l)	+ 0,85
Ag ⁺ + e ⁻ ⇌ Ag	+ 0,80
NO ₃ ⁻ + 2H ⁺ + e ⁻ ⇌ NO ₂ (g) + H ₂ O	+ 0,80
Fe ³⁺ + e ⁻ ⇌ Fe ²⁺	+ 0,77
O ₂ (g) + 2H ⁺ + 2e ⁻ ⇌ H ₂ O ₂	+ 0,68
I ₂ + 2e ⁻ ⇌ 2I ⁻	+ 0,54
Cu ⁺ + e ⁻ ⇌ Cu	+ 0,52
SO ₂ + 4H ⁺ + 4e ⁻ ⇌ S + 2H ₂ O	+ 0,45
2H ₂ O + O ₂ + 4e ⁻ ⇌ 4OH ⁻	+ 0,40
Cu ²⁺ + 2e ⁻ ⇌ Cu	+ 0,34
SO ₄ ²⁻ + 4H ⁺ + 2e ⁻ ⇌ SO ₂ (g) + 2H ₂ O	+ 0,17
Cu ²⁺ + e ⁻ ⇌ Cu ⁺	+ 0,16
Sn ⁴⁺ + 2e ⁻ ⇌ Sn ²⁺	+ 0,15
S + 2H ⁺ + 2e ⁻ ⇌ H ₂ S(g)	+ 0,14
2H ⁺ + 2e ⁻ ⇌ H ₂ (g)	0,00
Fe ³⁺ + 3e ⁻ ⇌ Fe	- 0,06
Pb ²⁺ + 2e ⁻ ⇌ Pb	- 0,13
Sn ²⁺ + 2e ⁻ ⇌ Sn	- 0,14
Ni ²⁺ + 2e ⁻ ⇌ Ni	- 0,27
Co ²⁺ + 2e ⁻ ⇌ Co	- 0,28
Cd ²⁺ + 2e ⁻ ⇌ Cd	- 0,40
Cr ³⁺ + e ⁻ ⇌ Cr ²⁺	- 0,41
Fe ²⁺ + 2e ⁻ ⇌ Fe	- 0,44
Cr ³⁺ + 3e ⁻ ⇌ Cr	- 0,74
Zn ²⁺ + 2e ⁻ ⇌ Zn	- 0,76
2H ₂ O + 2e ⁻ ⇌ H ₂ (g) + 2OH ⁻	- 0,83
Cr ²⁺ + 2e ⁻ ⇌ Cr	- 0,91
Mn ²⁺ + 2e ⁻ ⇌ Mn	- 1,18
Al ³⁺ + 3e ⁻ ⇌ Al	- 1,66
Mg ²⁺ + 2e ⁻ ⇌ Mg	- 2,36
Na ⁺ + e ⁻ ⇌ Na	- 2,71
Ca ²⁺ + 2e ⁻ ⇌ Ca	- 2,87
Sr ²⁺ + 2e ⁻ ⇌ Sr	- 2,89
Ba ²⁺ + 2e ⁻ ⇌ Ba	- 2,90
Cs ⁺ + e ⁻ ⇌ Cs	- 2,92
K ⁺ + e ⁻ ⇌ K	- 2,93
Li ⁺ + e ⁻ ⇌ Li	- 3,05

↓
Increasing strength of reducing agents/
Toenemende sterkte van reduceermiddels

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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

MATHEMATICS P2

NOVEMBER 2023

MARKS: 150

TIME: 3 hours

This question paper consists of 13 pages, 1 information sheet
and an answer book of 23 pages.

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Physical Sciences/P2

4
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TABLE 4B: STANDARD REDUCTION POTENTIALS
TABEL 4B: STANDAARD-REDUKSIEPOTENSIALE

↑
Increasing strength of oxidising agents/
Toenemende sterkte van oksideermiddels

Half-reactions/Halfreaksies	E ⁰ (V)
Li ⁺ + e ⁻ ⇌ Li	- 3,05
K ⁺ + e ⁻ ⇌ K	- 2,93
Cs ⁺ + e ⁻ ⇌ Cs	- 2,92
Ba ²⁺ + 2e ⁻ ⇌ Ba	- 2,90
Sr ²⁺ + 2e ⁻ ⇌ Sr	- 2,89
Ca ²⁺ + 2e ⁻ ⇌ Ca	- 2,87
Na ⁺ + e ⁻ ⇌ Na	- 2,71
Mg ²⁺ + 2e ⁻ ⇌ Mg	- 2,36
Al ³⁺ + 3e ⁻ ⇌ Al	- 1,66
Mn ²⁺ + 2e ⁻ ⇌ Mn	- 1,18
Cr ²⁺ + 2e ⁻ ⇌ Cr	- 0,91
2H ₂ O + 2e ⁻ ⇌ H ₂ (g) + 2OH ⁻	- 0,83
Zn ²⁺ + 2e ⁻ ⇌ Zn	- 0,76
Cr ³⁺ + 3e ⁻ ⇌ Cr	- 0,74
Fe ²⁺ + 2e ⁻ ⇌ Fe	- 0,44
Cu ³⁺ + e ⁻ ⇌ Cu ²⁺	- 0,41
Cd ²⁺ + 2e ⁻ ⇌ Cd	- 0,40
Co ²⁺ + 2e ⁻ ⇌ Co	- 0,28
Ni ²⁺ + 2e ⁻ ⇌ Ni	- 0,27
Sn ²⁺ + 2e ⁻ ⇌ Sn	- 0,14
Pb ²⁺ + 2e ⁻ ⇌ Pb	- 0,13
Fe ³⁺ + 3e ⁻ ⇌ Fe	- 0,06
2H ⁺ + 2e ⁻ ⇌ H ₂ (g)	0,00
S + 2H ⁺ + 2e ⁻ ⇌ H ₂ S(g)	+ 0,14
Sn ⁴⁺ + 2e ⁻ ⇌ Sn ²⁺	+ 0,15
Cu ²⁺ + e ⁻ ⇌ Cu ⁺	+ 0,16
SO ₄ ²⁻ + 4H ⁺ + 2e ⁻ ⇌ SO ₂ (g) + 2H ₂ O	+ 0,17
Cu ²⁺ + 2e ⁻ ⇌ Cu	+ 0,34
2H ₂ O + O ₂ + 4e ⁻ ⇌ 4OH ⁻	+ 0,40
SO ₂ + 4H ⁺ + 4e ⁻ ⇌ S + 2H ₂ O	+ 0,45
Cu ⁺ + e ⁻ ⇌ Cu	+ 0,52
I ₂ + 2e ⁻ ⇌ 2I ⁻	+ 0,54
O ₂ (g) + 2H ⁺ + 2e ⁻ ⇌ H ₂ O ₂	+ 0,68
Fe ³⁺ + e ⁻ ⇌ Fe ²⁺	+ 0,77
NO ₃ ⁻ + 2H ⁺ + e ⁻ ⇌ NO ₂ (g) + H ₂ O	+ 0,80
Ag ⁺ + e ⁻ ⇌ Ag	+ 0,80
Hg ₂ ²⁺ + 2e ⁻ ⇌ 2Hg(l)	+ 0,85
NO ₃ ⁻ + 4H ⁺ + 3e ⁻ ⇌ NO(g) + 2H ₂ O	+ 0,96
Br ₂ (l) + 2e ⁻ ⇌ 2Br ⁻	+ 1,07
Pt ²⁺ + 2e ⁻ ⇌ Pt	+ 1,20
MnO ₂ + 4H ⁺ + 2e ⁻ ⇌ Mn ²⁺ + 2H ₂ O	+ 1,23
O ₂ (g) + 4H ⁺ + 4e ⁻ ⇌ 2H ₂ O	+ 1,23
Cr ₂ O ₇ ²⁻ + 14H ⁺ + 6e ⁻ ⇌ 2Cr ³⁺ + 7H ₂ O	+ 1,33
Cl ₂ (g) + 2e ⁻ ⇌ 2Cl ⁻	+ 1,36
MnO ₄ ⁻ + 8H ⁺ + 5e ⁻ ⇌ Mn ²⁺ + 4H ₂ O	+ 1,51
H ₂ O ₂ + 2H ⁺ + 2e ⁻ ⇌ 2H ₂ O	+ 1,77
Co ³⁺ + e ⁻ ⇌ Co ²⁺	+ 1,81
F ₂ (g) + 2e ⁻ ⇌ 2F ⁻	+ 2,87

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Mathematics/P2

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

- This question paper consists of 10 questions.
- Answer ALL the questions in the SPECIAL ANSWER BOOK provided.
- Clearly show ALL calculations, diagrams, graphs, etc. which you have used in determining your answers.
- Answers only will NOT necessarily be awarded full marks.
- You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
- If necessary, round off answers correct to TWO decimal places, unless stated otherwise.
- Diagrams are NOT necessarily drawn to scale.
- An information sheet with formulae is included at the end of the question paper.
- Write neatly and legibly.

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MATRIC REVISION

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Mathematics/P2

3
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DBE/November 2023

QUESTION 1

Truck drivers travel a certain distance and have a rest before travelling further. A driver kept record of the distance he travelled (in km) on 8 trips and the amount of time he rested (in minutes) before he continued his journey. The information is given in the table below.

Distance travelled (in km) (x)	180	200	400	600	170	350	270	300
Amount of rest time (in minutes) (y)	20	25	55	120	15	50	40	45

- 1.1 Determine the equation of the least squares regression line for the data. (3)
- 1.2 If a truck driver travelled 550 km, predict the amount of time (in minutes) that he should rest before continuing his journey. (2)
- 1.3 Write down the correlation coefficient for the data. (1)
- 1.4 Interpret your answer to QUESTION 1.3. (1)
- 1.5 At each stop, the truck driver spent money buying food and other refreshments. The amount spent (in rands) is given in the table below.

100	150	130	200	50	180	200	190
-----	-----	-----	-----	----	-----	-----	-----

- 1.5.1 Calculate the mean amount of money he spent at each stop. (2)
- 1.5.2 Calculate the standard deviation for the data. (1)
- 1.5.3 At how many stops did the driver spend an amount that was less than one standard deviation below the mean? (2)
- [12]

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Mathematics/P2

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QUESTION 2

At a certain school, the staff committee wanted to determine how many glasses of water the staff members drank during a school day. All teachers present on a specific day were interviewed. The information is shown in the table below.

NUMBER OF GLASSES OF WATER DRANK PER DAY	NUMBER OF STAFF MEMBERS
$0 \leq x < 2$	5
$2 \leq x < 4$	15
$4 \leq x < 6$	13
$6 \leq x < 8$	5
$8 \leq x < 10$	2

- 2.1 Complete the cumulative frequency column provided in the table in the ANSWER BOOK. (2)
- 2.2 How many staff members were interviewed? (1)
- 2.3 How many staff members drank fewer than 6 glasses of water during a school day? (1)
- 2.4 The staff committee observed that k teachers were absent on the day of the interviews. It was found that half of these k teachers drank from 0 to fewer than 2 (that is $0 \leq x < 2$) glasses of water per day, while the remainder of them drank from 4 to fewer than 6 (that is $4 \leq x < 6$) glasses of water per day. When these k teachers are included in the data, the estimated mean is 4 glasses of water per staff member per day.
- How many teachers were absent on the day of the interviews? (4)
- [8]

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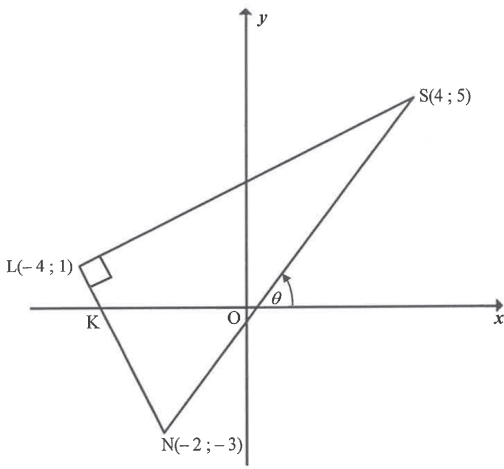
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QUESTION 3

In the figure, $L(-4 ; 1)$, $S(4 ; 5)$ and $N(-2 ; -3)$ are the vertices of a triangle having $\angle L = 90^\circ$. LN intersects the x -axis at K .



- 3.1 Calculate the length of SL . Leave your answer in surd form. (2)
- 3.2 Calculate the gradient of SN . (2)
- 3.3 Calculate the size of θ , the angle of inclination of SN . (2)
- 3.4 Calculate the size of $\angle LNS$. (3)
- 3.5 Determine the equation of the line which passes through L and is parallel to SN . Write your answer in the form $y = mx + c$. (3)
- 3.6 Calculate the area of $\triangle LSN$. (3)
- 3.7 Calculate the coordinates of point P , which is equidistant from L , S and N . (3)
- 3.8 Calculate the size of $\angle LPS$. (2)
- [20]

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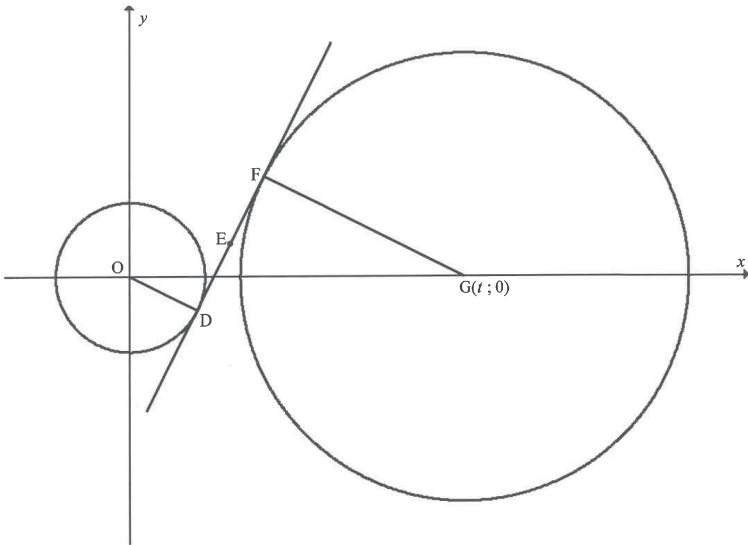
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QUESTION 4

In the diagram, the circle with centre O has the equation $x^2 + y^2 = 20$. $G(t ; 0)$ is the centre of the larger circle. A common tangent touches the circles at D and F respectively, such that $D(p ; -2)$ lies in the 4th quadrant.



- 4.1 Given that $D(p ; -2)$ lies on the smaller circle, show that $p = 4$. (2)
- 4.2 $E(6 ; 2)$ is the midpoint of DF . Determine the coordinates of F . (3)
- 4.3 Determine the equation of the common tangent, DF , in the form $y = mx + c$. (4)
- 4.4 Calculate the value of t . Show ALL working. (3)
- 4.5 Determine the equation of the larger circle in the form $ax^2 + by^2 + cx + dy + e = 0$. (4)
- 4.6 The smaller circle must be translated by k units along the x -axis to touch the larger circle internally. Calculate the possible values of k . (4)
- [20]

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QUESTION 5

5.1 Given: $\sin \beta = \frac{1}{3}$, where $\beta \in (90^\circ; 270^\circ)$
Without using a calculator, determine each of the following:

5.1.1 $\cos \beta$ (3)

5.1.2 $\sin 2\beta$ (3)

5.1.3 $\cos(450^\circ - \beta)$ (3)

5.2 Given: $\frac{\cos^4 x + \sin^2 x \cdot \cos^2 x}{1 + \sin x}$

5.2.1 Prove that $\frac{\cos^4 x + \sin^2 x \cdot \cos^2 x}{1 + \sin x} = 1 - \sin x$ (4)

5.2.2 For what value(s) of x in the interval $x \in [0^\circ; 360^\circ]$ is $\frac{\cos^4 x + \sin^2 x \cdot \cos^2 x}{1 + \sin x}$ undefined? (2)

5.2.3 Write down the minimum value of the function defined by $y = \frac{\cos^4 x + \sin^2 x \cdot \cos^2 x}{1 + \sin x}$ (2)

5.3 Given: $\cos(A - B) = \cos A \cos B + \sin A \sin B$

5.3.1 Use the above identity to deduce that $\sin(A - B) = \sin A \cos B - \cos A \sin B$ (3)

5.3.2 Hence, or otherwise, determine the general solution of the equation $\sin 48^\circ \cos x - \cos 48^\circ \sin x = \cos 2x$ (5)

5.4 Simplify $\frac{\sin 3x + \sin x}{\cos 2x + 1}$ to a single trigonometric ratio. (6)
[31]

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QUESTION 7

In the diagram, S, T and K lie in the same horizontal plane. RS is a vertical tower. The angle of depression from R to K is β . $\angle TSK = \alpha$, $TS = p$ metres and the area of $\triangle STK$ is $q \text{ m}^2$.

7.1 Determine the length of SK in terms of p , q and α . (2)

7.2 Show that $RS = \frac{2q \tan \beta}{p \sin \alpha}$ (2)

7.3 Calculate the size of α if $\alpha < 90^\circ$ and $RS = 70 \text{ m}$, $p = 80 \text{ m}$, $q = 2\,500 \text{ m}^2$ and $\beta = 42^\circ$. (3)
[7]

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QUESTION 6

In the diagram, the graphs of $f(x) = 2\sin 2x$ and $g(x) = -\cos(x + 45^\circ)$ are drawn for the interval $x \in [0^\circ; 180^\circ]$. $A(105^\circ; -1)$ lies on f .

6.1 Write down the period of f . (1)

6.2 Determine the range of g in the interval $x \in [0^\circ; 180^\circ]$. (2)

6.3 Determine the values of x , in the interval $x \in [0^\circ; 180^\circ]$, for which:

6.3.1 $f(x) \cdot g(x) > 0$ (2)

6.3.2 $f(x) + 1 \leq 0$ (2)

6.4 Another graph p is defined as $p(x) = -f(x)$. $D(k; -1)$ lies on p . Determine the value(s) of k in the interval $x \in [0^\circ; 180^\circ]$. (3)

6.5 Graph h is obtained when g is translated 45° to the left. Determine the equation of h . Write your answer in its simplest form. (2)
[12]

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QUESTION 8

8.1 In the diagram, O is the centre of the circle.

Use the diagram above to prove the theorem which states that the angle subtended by a chord at the centre of the circle is equal to twice the angle subtended by the same chord at the circumference, that is, prove that $\angle TOP = 2\angle KPT$. (5)

8.2 In the diagram, O is the centre of the circle and ABCD is a cyclic quadrilateral. OB and OD are drawn.

If $\hat{O}_1 = 4x + 100^\circ$ and $\hat{C} = x + 34^\circ$, calculate, giving reasons, the size of x . (5)

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8.3In the diagram, O is the centre of the larger circle. OB is a diameter of the smaller circle. Chord AB of the larger circle intersects the smaller circle at M and B.

8.3.1Write down the size of $\hat{OMB}$. Provide a reason.

(2)

8.3.2If $AB = \sqrt{300}$ units and $OM = 5$ units, calculate, giving reasons, the length of OB.

(4)

[16]

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QUESTION 10

In the diagram, PQRS is a cyclic quadrilateral such that $PQ = PR$. The tangents to the circle through P and R meet QS produced at A. RS is produced to meet tangent AP at B. PS is produced to meet tangent AR at C. PR and QS intersect at M.

Prove, giving reasons, that:

10.1 $\hat{S}_3 = \hat{S}_4$

(5)

10.2SMRC is a cyclic quadrilateral

(4)

10.3RP is a tangent to the circle passing through P, S and A at P

(6)

[15]

TOTAL: 150

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QUESTION 9

In the diagram, ABCD is a parallelogram with $AB = 14$ units. AD is produced to E such that $AD : DE = 4 : 3$. EB intersects DC in F. $EB = 21$ units.

9.1Calculate, with reasons, the length of FB.

(3)

9.2Prove, with reasons, that $\triangle EDF \parallel \triangle EAB$.

(3)

9.3Calculate, with reasons, the length of FC.

(3)

[9]

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INFORMATION SHEET

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$A = P(1 + ni)$

$T_n = a + (n - 1)d$

$T_n = ar^{n-1}$

$F = \frac{x[1 + i]^n - 1}{i}$

$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$y = mx + c$

$(x - a)^2 + (y - b)^2 = r^2$

$\text{In } \triangle ABC: \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

$a^2 = b^2 + c^2 - 2bc \cdot \cos A$

$\text{area } \triangle ABC = \frac{1}{2}ab \cdot \sin C$

$\sin(\alpha + \beta) = \sin \alpha \cdot \cos \beta + \cos \alpha \cdot \sin \beta$

$\cos(\alpha + \beta) = \cos \alpha \cdot \cos \beta - \sin \alpha \cdot \sin \beta$

$\cos 2\alpha = \begin{cases} \cos^2 \alpha - \sin^2 \alpha \\ 1 - 2\sin^2 \alpha \\ 2\cos^2 \alpha - 1 \end{cases}$

$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$

$P(A) = \frac{n(A)}{n(S)}$

$\hat{y} = a + bx$

$A = P(1 - ni)$

$S_n = \frac{n}{2}[2a + (n - 1)d]$

$S_n = \frac{a(r^n - 1)}{r - 1}; r \neq 1$

$P = \frac{x[1 - (1 + i)^{-n}]}{i}$

$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

$y - y_1 = m(x - x_1)$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \tan \theta$

$\sin(\alpha - \beta) = \sin \alpha \cdot \cos \beta - \cos \alpha \cdot \sin \beta$

$\cos(\alpha - \beta) = \cos \alpha \cdot \cos \beta + \sin \alpha \cdot \sin \beta$

$\sin 2\alpha = 2\sin \alpha \cdot \cos \alpha$

$\sigma^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}$

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

$b = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2}$

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SPORTS

Wynberg and Rondebosch dominate Cape Schools Cricket Festival

JOHNATHAN PAOLI

The Cape Schools Cricket Festival delivered another dose of high-quality schoolboy cricket during the first weekend of October, with Wynberg Boys' High and Rondebosch Boys' High producing commanding performances on home turf.

Both schools turned in displays that underlined their pedigree, securing convincing victories over St Andrew's College of Makhanda and Queen's College of Komani, respectively.

The annual festival, which brings together leading cricket schools from across South Africa, is as much a celebration of the sport's traditions as it is a proving ground for the next generation of provincial and national talent.

The results were a reminder of the strength of Cape Town's cricket nurseries.

At the Jacques Kallis Oval, Wynberg Boys' High chose to bat first after winning the toss against St Andrew's College.

Their innings of 208 all out looked competitive but hardly unassailable. What followed was a blend of disciplined batting, individual flair, and, most significantly, a devastating spell of bowling that turned the contest.

The standout with the bat was Moosa Gabriels, whose 63 off 78 balls anchored Wynberg's innings.

Calm at the crease and assured in his stroke play, he found the gaps regularly, stroking five boundaries.

He was ably supported by Storme van Rooyen, who chipped in with a vital 47 off 76 deliveries, cracking six fours.

Their partnership ensured Wynberg recovered from early jitters and built a foundation.

When the middle order faltered, Joshua Prince showed grit. Coming in at 166/7, Prince added 32 from 34 balls, fighting to stretch the total and frustrate the visiting bowlers.

His contribution, though modest in numbers, was priceless in context, as Wynberg managed to cross the 200-run mark.

For St Andrew's, William Beamish impressed with the ball, claiming 4/37 in 11.3 overs with a probing line that troubled Wynberg's middle order.

Support came from Rhys Wiblin, who worked hard for his 2/51 in 10 overs, while the fielders backed up their bowlers with energy.



Good innings: Young cricketers at the Cape Schools Cricket Festival. - Photo: Dale College.

Chasing 209 to win, the Makhanda side began with promise.

Opener Benjamin Scharges knuckled down, displaying patience and technique to compile 53 off 109 balls. He struck five fours, resisting the early pressure to keep the visitors in contention.

Later, Samuel Scheckter injected momentum with a solid 41 off 77, which included five fours and a cleanly struck six. With the score building steadily, St Andrew's looked well-positioned.

But Damien Harris had other ideas.

The Wynberg bowler delivered a match-winning performance, returning remarkable figures of 5/13 from 12 overs.

His spell, which included seven maidens, was an exhibition of accuracy, control, and relentless-ness that shattered St Andrew's batting order. His wickets derailed the chase and transformed the game.

Backing him up, Fawaaz Hendricks struck twice, taking 2/24 in eight overs.

The pressure never relented, and St Andrew's hopes evaporated as they were bowled out for 179.

Wynberg had pulled off a 29-

run win, built on a well-rounded team effort but sealed by Harris's brilliance.

Over at Rondebosch's Cricket A Oval, the home side was in a ruthless mood.

In their two-innings, one-day match, Rondebosch dominated Queen's College from the outset, securing a comprehensive innings-and-64-run victory.

Winning the toss and batting first, Queen's endured a nightmare opening.

Their innings folded for just 48 runs, undone by relentless bowling. Rondebosch's attack shared the spoils, with James Kirsten taking 3/15 in six overs, while Hlumelo Mgweba claimed 2/1 in three overs, suffocating the batsmen with pace and movement.

Schalk Fourie chipped in with 2/6, his accuracy leaving Queen's reeling.

With such a small total to chase, Rondebosch's batsmen had license to play freely, and they did not disappoint.

Openers Janko Webb and Daniel Cooke produced a sparkling stand worth 104 runs.

Webb entertained the home crowd with a fluent 61 from 52 balls, peppering the boundary with seven fours and a six.

Cooke, no less aggressive, matched his partner with 59 off 58 balls. Their dominant display set the tone and removed any faint hopes Queen's had of a comeback.

The middle order kept the scoreboard ticking.

Daniel Bosman finished unbeaten on 43 off 32 deliveries, playing with controlled aggression, while Noah Heath supported him with 32 not out off 43 balls.

Adeeb Levy's brisk 31 added to the total as Rondebosch declared on 232/3.

For Queen's, the lone bright spot was Sipho Mjekula, who showed determination with 2/48 in eight overs.

Trailing by a mountain of runs, Queen's College showed character in their second innings.

This time, opener Aiden van Jaarsveld produced the innings of the match for his side, scoring 79 off 107 balls.

His knock, decorated with 10 fours and three sixes, was a display of grit and flair. Ross Fitzhenry's 20 off 47 provided some stability in the middle order.

Still, Rondebosch's bowlers

never lost their grip. Timothy Short bowled tirelessly, his persistence rewarded with figures of 3/39 from 16 overs, with two of his victims trapped leg before wicket.

Kirsten again struck, adding 2/12 in seven overs to his first-innings haul.

At stumps, Queen's were 120/5, still well short, and the result confirmed in Rondebosch's favour.

For both Wynberg and Rondebosch, the victories were more than just results; they were statements of intent at one of the country's most respected school cricket festivals.

The Jacques Kallis Oval and Rondebosch Cricket A Oval witnessed commanding cricket that highlighted why Cape Town schools consistently produce top-class players for higher honours.

The margins of victory — 29 runs for Wynberg and an innings and 64 runs for Rondebosch — underscored their control of the contests.

From Harris's destructive bowling to the fluency of Webb and Cooke at the top of the order, the day produced individual brilliance matched by cohesive team play.