KENYA NATIONAL EXAMINATION AND ASSESSMENT PREDICTION SERIES

ENDTERM 2 ASSESSMENT 2025

GRADE 8

PRETECHNICAL STUDIES PAPER 1

MARKING SCHEME

SECTION A (30 marks)

1. B
2. C
3. D
4. A
5. C
6. C
7. C
8. B
9. D
10. D
11. B
12. A
13. C
14. C
15. B
16. A
17. B
18. C
19. D
20. B
21. C
22. B
23. C
24. C
25. B
26. B
27. C
28. B
29. C
30. A

SECTION B (50 marks)

31. **State two ways in which Pre-Technical Studies promote critical thinking skills in learners. (4 marks)**

    i. **Problem-solving through design challenges:** Learners are often presented with real-world problems that require them to analyze, brainstorm solutions, design, and implement their ideas. This iterative process of identifying issues, evaluating options, and refining solutions strengthens their critical thinking. For example, designing a simple irrigation system might involve critical thinking about water flow, materials, and efficiency.

ii. **Evaluation of materials and processes:** Learners are required to assess the suitability of different materials for specific applications or evaluate the effectiveness of various technical processes. This involves comparing properties, considering environmental impacts, and making informed decisions, thus fostering analytical and evaluative thinking. For instance, choosing between wood and plastic for a specific component requires critical evaluation of their properties.
iii. **Analysis of technical diagrams and instructions:** Interpreting and understanding complex technical drawings, schematics, and procedural instructions requires careful analysis, attention to detail, and the ability to visualize abstract concepts. This process hones their ability to break down information and understand relationships, which are key aspects of critical thinking.
iv. **Troubleshooting and fault diagnosis:** When practical projects encounter issues, learners must critically analyze the problem, identify potential causes, and systematically test solutions. This encourages logical deduction and systematic reasoning.

32. **Technical drawing uses different types of projections to represent objects.**

a) Name two types of pictorial projections. (2 marks)

i. Isometric projection
ii. Oblique projection
iii. Perspective projection

b) State one advantage of using isometric projection over oblique projection. (1 mark)

i. **More realistic appearance:** Isometric projection generally provides a more realistic and visually balanced representation of an object compared to oblique projection because all three axes are equally foreshortened, giving a sense of depth and proportion that is closer to what the eye perceives.
ii. **Better representation of all three dimensions:** In isometric projection, all three dimensions (length, width, height) are drawn to scale along the isometric axes, which makes it easier to visualize and measure the true dimensions of the object from the drawing. Oblique projection often distorts one or two faces, making proportional representation less accurate.

33. **The picture below shows a common marking tool used in carpentry.**

a) Identify the tool shown above. (1 mark)

i. Marking gauge

b) State two uses of the tool. (2 marks)

i. To mark a line parallel to an edge or surface.
ii. To mark a shoulder line on a work-piece for joints (e.g., tenon joint).
iii. To scribe lines for cutting or shaping wood.
iv. To transfer measurements from one piece of wood to another.

34. **Sustainable practices are encouraged in the use of materials.**

a) Give two examples of composite materials. (2 marks)

i. Fiberglass (Glass fiber reinforced polymer)
ii. Reinforced Concrete (Concrete reinforced with steel bars)
iii. Plywood/Laminates (Wood veneers bonded together)
iv. Carbon Fiber Reinforced Polymer (CFRP)
v. Particle board/MDF (Wood particles/fibers bonded with resin)

b) Name one application for each composite material in 34(a). (2 marks)

i. **Fiberglass:** Used in boat hulls, car bodies, wind turbine blades, shower stalls, insulation.
ii. **Reinforced Concrete:** Used in building foundations, beams, columns, bridges, dams, pavements.
iii. **Plywood/Laminates:** Used in furniture, flooring, wall panels, doors, structural components in construction.
iv. **Carbon Fiber Reinforced Polymer (CFRP):** Used in high-performance sports equipment (bicycles, tennis rackets), aerospace components, high-end automotive parts.
v. **Particle board/MDF:** Used in flat-pack furniture, cabinet carcasses, shelving, decorative panels.

35. **Freehand sketching is an important skill in technical communication. Make a freehand sketch of a cone with a circular base. (4 marks)**
    i. A good freehand sketch of a cone should show:

        i. A clear circular or elliptical base (depending on the viewing angle, an ellipse is more common for a cone in 3D perspective).
        ii. Two straight lines converging upwards from the edges of the base to a single apex (point).
        iii. The lines should appear relatively straight and the curves smooth, indicating a steady hand.
        iv. Proportions should be reasonable (e.g., the base should not be too narrow or too wide compared to the height).
        v. Shading or thicker lines might be used to indicate depth or visible edges.

    Marking points (out of 4):

    ii. Correct shape (cone identifiable): 1 mark
    iii. Circular/elliptical base drawn reasonably: 1 mark
    iv. Apex and converging sides drawn reasonably: 1 mark
    v. Overall neatness and representation of 3D form (e.g., consistent line quality, implied perspective): 1 mark
36. **Metal joining is a crucial process in fabrication. State three factors to consider when choosing a method for joining two pieces of metal. (3 marks)**
    i. **Type of metals to be joined:** Different metals (e.g., steel, aluminum, copper) have varying properties (melting points, conductivity, strength) that make certain joining methods more suitable than others (e.g., soldering for electrical connections, welding for structural steel).
    ii. **Strength required for the joint:** The intended application and load the joint will bear determine the necessary strength. Welding typically provides very strong joints, while riveting or brazing might offer moderate strength, and soldering provides lower strength.
    iii. **Cost of the joining method and materials:** Some methods require expensive equipment (e.g., laser welding) or consumables (e.g., specialized electrodes). The overall cost, including labor, must be considered.
    iv. **Appearance of the finished joint:** For aesthetic purposes, some joints (e.g., seamless welds) are preferred over others (e.g., visible rivets or large solder beads).
    v. **Working environment and safety:** Some joining methods produce fumes, sparks, or high heat, requiring specific safety precautions or a particular working environment (e.g., good ventilation for welding).
    vi. **Required production speed:** For mass production, faster joining methods (e.g., spot welding) might be chosen over slower, more labor-intensive methods.
    vii. **Dissimilar metals:** If joining two different types of metals, some methods may be more effective or even possible (e.g., brazing can join dissimilar metals where welding might be difficult).
    viii. **Portability of equipment:** For on-site joining, portable equipment (e.g., stick welders) might be preferred.

37. **Geometrical constructions require precision. Construct a circle with a radius of 4cm using a pair of compasses and a ruler. (3 marks)**

i. Using a ruler, measure 4cm on the compass. To do this, place the compass point on the 0 mark of the ruler and extend the pencil leg to the 4cm mark.
ii. Mark a point on your paper to be the center of the circle.
iii. Place the compass point firmly on the marked center.
iv. Rotate the compass (holding the top knob) 360 degrees to draw a complete circle. Ensure the compass opening remains fixed at 4cm.

Marking points (out of 3):

i. Clearly marked center point: 1 mark
ii. Accurate radius of 4cm (checked with a ruler by the examiner): 1 mark
iii. A complete, smooth, and closed circle: 1 mark

38. **Businesses often interact with various stakeholders. State two ways in which businesses contribute to the welfare of the community. (2 marks)**

i. **Job creation/Employment opportunities:** Businesses hire people, providing them with income, which improves their living standards and the overall economic well-being of families and the community.
ii. **Provision of goods and services:** Businesses meet the needs and wants of the community by producing and supplying essential (e.g., food, housing) and non-essential goods and services, improving quality of life.
iii. **Payment of taxes:** Businesses pay various taxes (e.g., corporate tax, VAT) to the government, which are then used to fund public services like infrastructure (roads, schools), healthcare, and security.
iv. **Corporate Social Responsibility (CSR) initiatives:** Many businesses engage in CSR activities such as sponsoring local schools, supporting community health programs, environmental conservation efforts, or donating to charitable causes.
v. **Stimulating local economy:** By purchasing raw materials, hiring local suppliers, and selling products, businesses circulate money within the local economy, leading to growth and development.
vi. **Innovation and technological advancement:** Businesses often invest in research and development, leading to new technologies, products, and services that can benefit the community and solve societal challenges.

39. **A business had the following balances for the month of April 2025:**

Item	Amount (Ksh)
Opening Inventory	15,000
Purchases	25,000
Sales	40,000
Closing Inventory	10,000

Calculate the Cost of Goods Sold for the month. (3 marks)

Answer: Ksh 30,000

Working:

Cost of Goods Sold (COGS) = Opening Inventory + Purchases - Closing Inventory

COGS = Ksh 15,000 + Ksh 25,000 - Ksh 10,000 COGS = Ksh 40,000 - Ksh 10,000 COGS = Ksh 30,000

40. **Consumer protection is important for a fair marketplace. State two responsibilities of consumers in ensuring they are not exploited. (2 marks)**

    i. **Being informed/Seeking information:** Consumers should research products/services, compare prices, read labels, and understand terms and conditions before making a purchase.
    ii. **Being vigilant/Checking products:** Consumers should inspect goods for quality, expiry dates, and authenticity before buying and immediately upon receiving them.
    iii. **Retaining proof of purchase:** Keeping receipts, warranties, and contracts is crucial for claiming refunds, exchanges, or repairs in case of defects or disputes.
    iv. **Reporting unfair practices:** Consumers have a responsibility to report misleading advertising, faulty products, or deceptive practices to relevant consumer protection bodies or authorities.
    v. **Using products correctly/Following instructions:** Misuse of products can void warranties and may not be covered under consumer protection laws.
    vi. **Asking questions/Clarifying doubts:** Before committing to a purchase, consumers should ask sellers for all necessary information and clarify any uncertainties.

41. **Mwangi is an aspiring entrepreneur and needs to conduct market research. Outline two reasons why market research is important before starting a business. (2 marks)**

    i. **To identify and understand target customers:** Market research helps in determining who the potential customers are, their needs, preferences, demographics, and buying habits. This information is crucial for tailoring products/services effectively.
    ii. **To assess market demand and viability:** It helps in understanding if there is a sufficient demand for the proposed product or service, thereby reducing the risk of investing in a non-viable business idea.
    iii. **To identify competition and competitive advantage:** Researching competitors helps in understanding their strengths and weaknesses, allowing the entrepreneur to identify unique selling propositions and differentiate their business.
    iv. **To minimize risks and avoid costly mistakes:** By gathering information, entrepreneurs can make informed decisions, anticipate challenges, and develop strategies to mitigate potential failures, saving time and resources.
    v. **To refine business ideas and strategies:** Market research provides data that can be used to modify or enhance the product/service, pricing strategy, marketing approach, and distribution channels to better suit market needs.
    vi. **To forecast sales and revenue:** Understanding market size and demand allows for more accurate projections of sales and revenue, which are essential for business planning and securing funding.

42. **Financial literacy is a key life skill. a) Distinguish between needs and wants in the context of personal finance. (2 marks)**

    i. **Needs** are essential items or services that are necessary for survival, well-being, or basic functioning. They are fundamental requirements without which one would struggle to live or thrive. Examples include food, water, shelter, basic clothing, and education.
    ii. **Wants** are desires or preferences that are not essential for survival but would improve quality of life or provide satisfaction. They are often luxuries or non-essential items that people aspire to have once their basic needs are met. Examples include entertainment, expensive gadgets, designer clothes, or frequent dining out.

    b) Give one example of a need and one example of a want for a Grade 8 learner. (1 mark)

    i. **Need:** School uniform / Textbooks / Food / Water / Shelter / Transport to school
    ii. **Want:** Smartphone / Video game console / Branded shoes / Sweets / Extra pocket money for non-essential items / Toys / Movie tickets

43. **A teacher wants to store a large amount of educational videos and share them with learners. State one computer hardware device that offers large storage capacity and portability for this purpose. (1 mark)**

i. External Hard Drive (HDD)
ii. Solid State Drive (SSD)
iii. USB Flash Drive (for very large quantities, an external HDD/SSD is more suitable)
iv. Memory Card (e.g., SD card, if used with a card reader)

44. **Match each of the following computer accessories with their primary function. (2 marks)**

i. **Web Camera:** Captures video and images for online communication.
ii. **Printer:** Produces hard copies of digital documents.
iii. **Flash Drive:** Portable storage device for files.
iv. **Uninterruptible Power Supply (UPS):** Provides temporary power backup during outages.

45. **Digital citizenship involves responsible and ethical use of technology. Name two positive uses of social media for learning purposes. (2 marks)**

i. **Access to educational content and resources:** Social media platforms can host educational videos, articles, and discussions from various institutions and experts, allowing learners to access a wide range of learning materials beyond traditional textbooks.
ii. **Collaborative learning and group projects:** Learners can use social media groups or features to collaborate on assignments, share ideas, discuss topics, and organize group projects, fostering teamwork and peer learning.
iii. **Communication with teachers and peers:** Social media can facilitate quick communication channels between learners and teachers for asking questions, receiving announcements, or getting support outside of class hours.
iv. **Networking and mentorship:** Learners can connect with professionals, experts, or mentors in their fields of interest, gaining insights, advice, and potential opportunities.
v. **Sharing and showcasing work:** Learners can share their projects, creative work, or research findings with a wider audience, receiving feedback and building a digital portfolio.
vi. **Staying updated on current events and academic news:** Many academic institutions and news outlets share relevant updates and research findings on social media, keeping learners informed.

46. **The following are steps for sending an email. They are not arranged in the correct order.**

(i) Click the "Send" button.
(ii) (Compose your message in the body of the email.
(iii) Open your email client or webmail.
(iv) Enter the recipient's email address in the "To" field and a subject.

Arrange the instructions in the correct order. (2 marks)

(iii) Open your email client or webmail.

(iv) Enter the recipient's email address in the "To" field and a subject.

(ii) Compose your message in the body of the email.

(i) Click the "Send" button.

47. **What is the main difference between hardware and software in a computer system? (1 mark)**

Hardware refers to the physical, tangible components of a computer system that you can touch and see (e.g., CPU, RAM, keyboard, monitor). **Software** refers to the intangible programs, instructions, and data that tell the hardware what to do (e.g., operating systems, applications, games). In simpler terms, hardware is the machine, and software is the set of instructions that makes the machine perform tasks.

48. **Cyber-bullying is a serious online threat. State one action a learner should take if they experience cyber-bullying. (1 mark)**

i. **Do not respond or retaliate:** Engaging with the cyber-bully often escalates the situation.
ii. **Save evidence:** Take screenshots or keep records of the messages, posts, or images as proof.
iii. **Block the cyber-bully:** Use the blocking features on social media or messaging apps to prevent further contact.
iv. **Tell a trusted adult:** Inform a parent, teacher, guardian, or school counselor immediately.
v. **Report the behavior:** Report the bullying to the platform administrators (social media site, messaging app) or school authorities.
vi. **Limit online activity:** Take a break from online platforms if the bullying is overwhelming.

49. **A Grade 8 teacher wants to calculate the average score of learners in a spreadsheet. The scores are in cells B2, B3, B4, and B5. Write the formula that the teacher would use to calculate the average score in cell B6. (2 marks)**

```
=AVERAGE(B2:B5)
```

```
=(B2+B3+B4+B5)/4
```

50. **A Pre-Technical Studies teacher created the following simple program to determine if a learner has passed or failed an exam based on a pass mark of 60.**

What will be the output if a learner scores:

a) 75: (1 mark) EXCEEDS EXPECTATION

b) 50: (1 mark) MEETS EXPECTATION

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