



*Let the mind manage the body
Que l'esprit gère le corps*

**MAURITIUS
EXAMINATIONS
SYNDICATE**

NCE 2021-2022 GRADE 9

Technology Studies

Component 1: Design & Technology

Subject code: N550

EXAMINER'S REPORT

July 2023

General Comments

The examiner's report is produced to offer constructive feedback on candidates' performance. It provides useful guidance for future candidates, on how Educators can improve their teaching and on how performance could be improved. The report should be read alongside the question paper. A copy of the question paper can be downloaded from the MES website.

The NCE assessment for the year 2021- 2022 was on the full syllabus. The assessment was scheduled in October 2022 and candidates had ample time to complete the syllabus and do the revision. Students of the Extended Programme took the same paper.

The duration of the paper is one hour fifteen minutes and its weighting to the overall assessment in Technology Studies is 50%. The design of the assessment is based on three assessment objectives. Approximately 50% of the total marks assess candidates' Knowledge and Understanding (AO1), another 40 % on Application Skills (AO2) and approximately 10 % is for Analysis and Evaluation (AO3).

The paper consists of Section A (25 marks) and Section B (25 marks). The candidates performed slightly better than anticipated and the question paper was appropriate to all level of ability. Most candidates attempted the majority of the questions.

Key messages

- Candidates need to read and understand the instructions on the cover page.
- Candidates need to read the questions carefully before attempting to answer.
- The marks allocated to each question or part of a question give an indication of the level of details required from the candidates.
- Candidates need to improve their drawing skills and master the techniques of using drawing instruments to draw objects in either 2D or 3D.

Paper Overview

Section A

Section A consists of 5 questions, including objective type questions namely MCQ items, fill-in the blanks, matching, true and false and very short answer questions. This section covers core knowledge and understanding of design and technology. To do well in Section A, candidates need to have a broad knowledge of materials and drawings. They should also demonstrate application of their knowledge gained.

Comments on specific questions

QUESTION 1 : Multiple Choice

Many candidates scored 70% of the marks and above. A significant number of candidates scored five or four marks. The weaker candidates were able to score at least one mark. Candidates followed the instructions properly. In certain rare cases, candidates did not follow the instructions given, but their answers were consistent (using ticks or crosses) and marks were awarded.

It is important to note that candidates are expected to encircle the letter corresponding to the correct answer when responding to Multiple-Choice Questions. When candidates wish to revise their answers, Educators are encouraged to advise them to:

1. cross out the letter encircled.
2. replace their crossed-out answer by encircling a new letter.
3. indicate, using an arrow, the final letter chosen.

An example is shown below.

(iii) A pulley is used to transmit motion.

A	linear	B	oscillating
C	reciprocating	D	rotary ←

Or

(iii) A pulley is used to transmit motion.

A	linear	B	oscillating
C	reciprocating	D	rotary ←

Item (i)

Exceptionally for item (i), mark was awarded for any option encircled. All four distractors were eco materials and could be used to make baskets, mats and hats.

Item (ii)

Most of the candidates answered this item correctly. In certain cases, candidates failed to differentiate between a stripper and a cutter.

Item (iii)

This item was generally well attempted.

Item (iv)

A significant number of candidates successfully displayed a good understanding of the holding tools.

Item (v)

There were many good responses with the majority of candidates being able to identify ‘air’ as the medium used to transmit motion.

QUESTION 2: True or False

Candidates generally followed the instructions given by using ‘ticks’ in the spaces provided. In very rare cases, the letter ‘T’ or ‘F’ were used consistently and marks were awarded for correct answers. A majority of candidates scored three marks or above. The same percentage of candidates scored either zero or the maximum marks.

Item a

A significant number of candidates answered the item correctly. In some cases, it seemed that candidates were not familiar with drawing instruments.

Item b

The majority of candidates recognised ‘tin’ being malleable as the correct answer.

Item c

The majority of candidates gave the correct answer.

Item d

This was a fairly easy statement where candidates responded positively.

Item e

Most of the candidates responded correctly.

QUESTION 3: Matching

This question required candidates to recall the symbols and names of the electric or electronic symbols. When answering this type of question, candidates must have knowledge of symbols and be familiar with their corresponding names. Most candidates understood the question well

and carried out the matching exercise properly as per the instructions given. Isolated cases of two arrows pointing to the same answer were observed.

Many candidates were not able to identify the symbol for *thermistor* correctly as they confused between the symbol for *thermistor* and that of a *variable resistor*.

50% of the population scored at least four or five marks.

Resistor

Most candidates were able to do the matching properly.

Diode

The majority of candidates' responses were correct.

Thermistor

A small proportion of candidates were able to give the correct answer. The majority of candidates could not distinguish between the variable resistor and thermistor symbols, thus matching with the incorrect answer.

Light bulb

The majority of the candidates identified the symbol of the *light bulb* correctly.

Switch

The majority of candidates responded with the correct answer.

QUESTION 4: Fill in the blanks

Most candidates understood the requirements of the question and selected the words from the list given. In rare cases, the blanks were left unanswered. Approximately 65 % of the candidates managed to score 4 to 5 marks. Some candidates did not know the meaning of the term alloy and did not score as they related it either to '*acrylic*' or '*Bevel Gear*'.

Item a)

Candidates generally had no difficulty to identify *cedar* as the correct answer.

Item b)

Most candidates responded correctly to this item, stating *design* as the correct answer.

Item c)

This item was answered well by the majority of candidates.

Item d)

Candidates had difficulty in recognising that *glass* is a replacement for acrylic.

Item e)

A small proportion of candidates had difficulty in identifying *motion* as the correct answer.

QUESTION 5

The majority of candidates attempted this question but very few scored full marks. A small proportion of candidates showed a clear understanding of lever and were able to label the different parts correctly. 40% of the population scored marks ranging from 3 to 5 marks.

Item (a)

Fewer candidates were able to correctly identify **A** as *Effort* (Force/Weight were also accepted) and **B** as *Fulcrum* or *Pivot*. Other candidates gained 1 mark for giving one correct answer.

Item (b)

Candidates were required to demonstrate an understanding of driving tools. There were many good responses from those who were able to sketch a wooden mallet. Many candidates needed to improve their knowledge and skills for sketching hand tools. Credit was awarded for accuracy of the drawings/sketches and good proportion.

Candidates did not score maximum marks as their sketches were not neat and proportionate. They had to sketch of the driving tool by showing clearly the head and the handle of the mallet either in 2D or 3D.

Section B

Section B consists of Question 6 covering rendering techniques and Questions 7 and 8 covering in-depth knowledge and understanding of drawing techniques and evaluation skills.

To do well in Section B candidates must have an in-depth knowledge and understanding of the:

- use of drawing instruments to draw objects either in 2D or 3 D;

- use of the design process to solve a problem;
- application of the appropriate rendering techniques to enhance an object.

QUESTION 6: Rendering

General comments

A small proportion of candidates demonstrated a thorough understanding of wood surface texture rendering using coloured pencils to show grain structure of wood. The outlines were neat, the shading was accurate and appropriate colours were used to produce the grain pattern as shown.

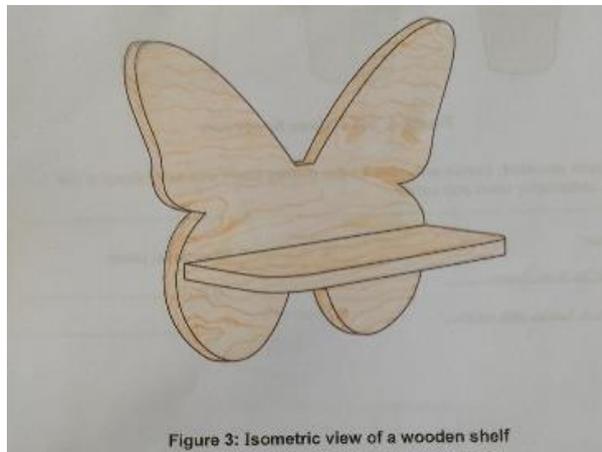


Figure 3: Isometric view of a wooden shelf

A few candidates scored only partial marks by applying only the colour of the wood texture. Many candidates applied the tone shading technique using the graphite pencils and marks were not allocated here.

Approximately half of the population did not understand the question properly and did not attempt it. It was observed that many candidates used the wrong technique to answer the question as they did not apply the appropriate colour/s related to wood surface texture rendering. Some candidates failed to differentiate between surface grain pattern and end grain pattern.

QUESTION 7

There were a small number of excellent candidates' responses that demonstrated a thorough understanding of the design problem and described the solution for holding the three flower pots with appropriate sketches and annotations. Approximately 30% of the population did not score any mark, with a majority not attempting the question at all.

Candidates' ideas for the display stand were represented as: floor standing, counter-top, wall mounted and wall hanging. Those who successfully attempted the sketching part were able to visualise and sketch their ideas either in 2D or 3D. Many candidates were able to analyse the idea and explain the reasoning using annotations. This suggests that they understood the word display stand.

A majority managed to analyse their sketches in terms of functionality and materials. However, only a few relevant answers included safety precautions. Many candidates used generic terms such as wood, metal and plastic for which marks were not awarded. Specific name of the material were expected. Appropriate properties related to the intended use of the stand were also accepted. Many candidates could not write clearly a statement about the intended function of the display stand.

A significant number of candidates had difficulty in writing a proper analysis regarding the function, materials and safety considerations. Candidates were expected to write about the safety either for the users or for the display stand or both. Marks were awarded for safety consideration such as no sharp edges, stability, support the weight of the pots or no protruding parts among others.

Most candidates who attempted the question produced a low-quality sketch by displaying poor knowledge of proportionality, materials thickness, realistic forms with no rendering or enhancements. Some candidates were not able to show the space where to place the three pots of the different sizes.

QUESTION 8

This question assessed the ability of a candidate to use the appropriate drawing instruments to draw objects either in 2D or 3D and also to be able to read and interpret the drawings. Only the most able candidates gained marks with some very well drawn responses seen. The marks obtained by the candidates ranged from 4 to 15. A significant number of candidates did not attempt the question.

Item (a)

Candidates were asked to complete a full-size oblique drawing of a toy lorry with the given projection lines. The body of the toy lorry needed to be drawn 120 mm wide by 30 mm deep with a height of 50 mm. The front face was to be drawn with a sloping edge. A circular hole needed to be drawn in the front face of the body having a diameter of 20 mm. Some candidates

did not use the given oblique axes to draw the toy lorry in oblique projection but they were not penalised if drawn correctly. Some responses were seen to be drawn in different orientations.

High achieving candidates successfully interpreted the given orthographic views and were able to draw an oblique view of the toy lorry to the given sizes with a good level of neatness and accuracy. Many candidates were able to draw only the front view of the toy lorry. Most candidates were able to locate only the position of the centre and to draw the circle accurately.

Many candidates showed some basic knowledge of oblique projection but were not able to complete the drawing fully. In some cases, the circle was drawn freehand and marks were not awarded for freehand sketching.

A few candidates were unable to use the correct dimensions.

Some candidates used isometric projection for their drawing for which marks were not awarded.

Some candidates did not use construction lines or erased construction lines they drew which were supposed to be left on the answer as mentioned in the instructions to candidates.

Poor quality of lines and neatness were observed.

Some candidates did not attempt the question.

Item (b)

Candidates were asked to complete the front and side views of a perfume bottle in the space provided. The majority of candidates respected the space provided to draw the front and side views. A significant number of candidates did not attempt the question.

Some candidates visualised the views but did not use the proper dimensions which resulted in distorted front and side views. They were not awarded full marks.

Many candidates had difficulty to draw the cap of the perfume bottle in its correct position.

A small proportion of candidates were able to correctly complete the two views but failed to produce good quality outline and neatness.

CONCLUSION AND RECOMMENDATIONS:

Candidates need to read the instructions properly before attempting the questions. They should try to focus on the key elements of each question. Open-ended questions are a challenge for most candidates and they should practice more questions related to design process, drawing shaped blocks with drawing equipment either in 2D or 3 D. Demonstrations are encouraged as it promotes observation skills in the learning of Design & Technology.

While carrying out demonstrations in the workshop, it is important that the attention of the candidates be drawn to the safety precautions to be taken in the workshop. Candidates need to improve their knowledge and understanding of the practical processes and techniques required to work the resistant materials such as wood, metal and plastic. In order to achieve this, candidates need to be able to match tools and equipment to specific purposes.

Research has shown that learning is promoted by doing hands-on activities and this helps to develop the acquired skills which helps learners develop their analytical and thinking skills.

Educators are reminded that time should be devoted to demonstration and practical classes wherever possible as theoretical classes only are not sufficient.

For the Design Process: Candidates need to improve their drawing skills. They must try to provide clearly drawn sketches when attempting questions that begin with the statement.

The design process should be included at regular intervals from the start of the year to prepare the candidates to develop such analytical skills. It is recommended to enhance sketching through project work, especially for generation of ideas. This will also enhance the presentation and allow candidates to write proper annotations as well as to sketch proportionately in 2D and 3D.

Pictorial projection: Emphasis should be laid on the quality of line (construction and outline) and neatness. Candidates should have access to proper drawing equipment during their course of study. They should be encouraged to use the crate method to solve problems related to dimensions. Candidates should be able to visualise objects in 2D and 3D. They should master the different projections used for drawing objects in 3D such as isometric projection at 30° on both projection lines whereas oblique projection is at 90° on one projection line and 45° on the second projection line.