

### 3.7 DRAWING AND DESIGN (449)

The Drawing and Design for the year 2022 was tested in two papers: Paper 1 and Paper 2. Paper 1 was a theory paper which constituted 60% of the final mark while paper 2 was a practical paper which constituted 40% of the final mark. The format and weighting of the papers was the same as in the previous years.

#### 3.7.1 Candidates overall performance

The table below shows candidates' overall performance for the five-year period, from 2018 to 2022.

**Table 16: Candidates overall performance in the years 2018, 2019, 2020, 2021 and 2022**

Year	Paper	Candidature	Maximum scores	Mean Score	Standard deviation
2018	1	742	60	36.8	11.37
	2		40	30.81	5.47
	Overall		100	67.61	15.45
2019	1	899	60	36.77	11.42
	2		40	31.27	5.57
	Overall		100	68.04	15.24
2020	1	1037	60	36.00	10.77
	2		40	31.30	5.82
	Overall		100	67.45	15.00
2021	1	1309	60	37.12	10.94
	2		40	29.79	5.28
	Overall		100	65.97	15.50
2022	1	1521	60	39.49	11.05
	2		40	29.81	5.98
	Overall		100	69.26	15.18

From the table above, the following observations can be made;

- (i) The candidature increased from 1309 in the year 2021 to 1521 in 2022.
- (ii) The mean score improved from 65.97 in 2021 to 69.26 in 2022.
- (iii) However, the standard deviation dropped slightly from 15.50 in 2021 to 15.18 in 2022.

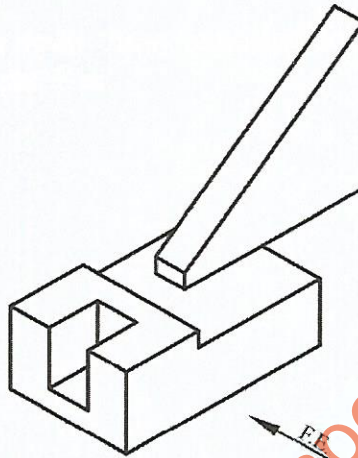
#### 3.7.2 Drawing and Design Paper 1 (449/1)

The questions which were reported to have been poorly responded to have been analyzed with a view to pointing out candidates' weaknesses and propose suggestions on some remedial measures that need to be taken in order to improve performance in future. The questions for discussions include 6, 7, 12 and 13

**Question 6**

**Figure 1** shows a block drawn in isometric projection. Draw in good proportion the following views in third angle projection:

- a) Front elevation
- b) Plan



**Figure 1**

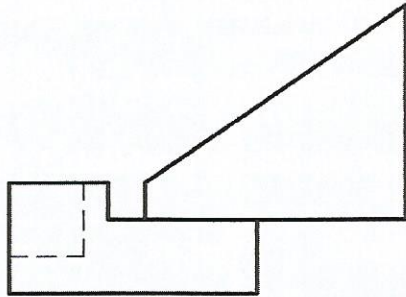
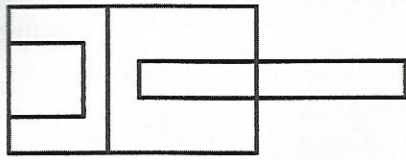
**Weakness**

Majority of the candidates gave the response in first angle instead of third angle projection

**Advice to teachers**

Teachers are advised to demonstrate to the students how to lay out orthographic views in both first and third angle projection and explain the difference between the two angles of projection. They should give students more exercises in drawing different views in both first angle and third angle projection

### Expected responses



### Question 7

Figure 2 shows an elevation and an incomplete plan of a truncated rectangular pyramid drawn in first angle projection

- (a) Copy the elevation.
- (b) Complete the plan

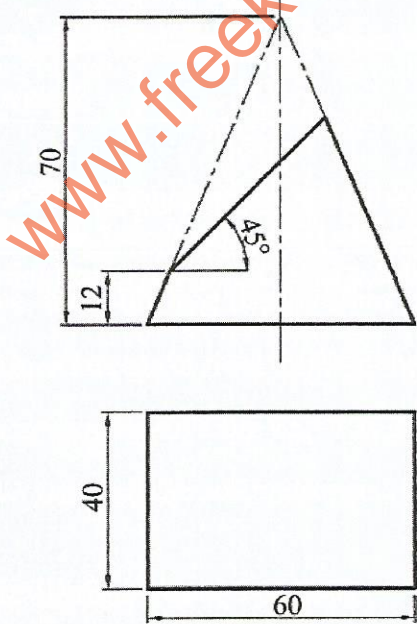


Figure 2

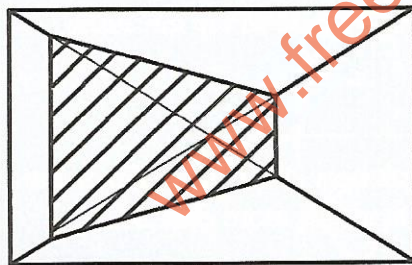
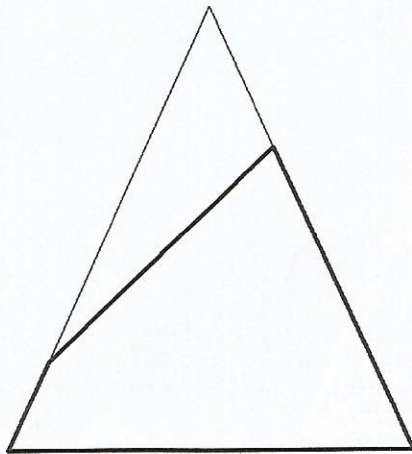
### Weakness

Some candidates could not project the details of the truncated part from the front elevation to the plan thus complete the plan.

### Advice to teachers

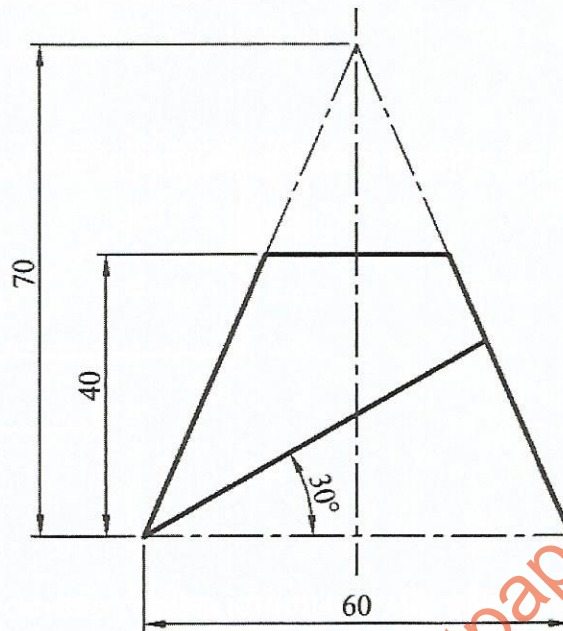
Teachers are advised to adequately cover the syllabus including the topic of solid geometry and give more exercises to the students for practice.

### Expected responses



**Question 12**

**Figure 6** shows a cone truncated at the top and bottom. Copy the figure and draw the surface development of the cone.

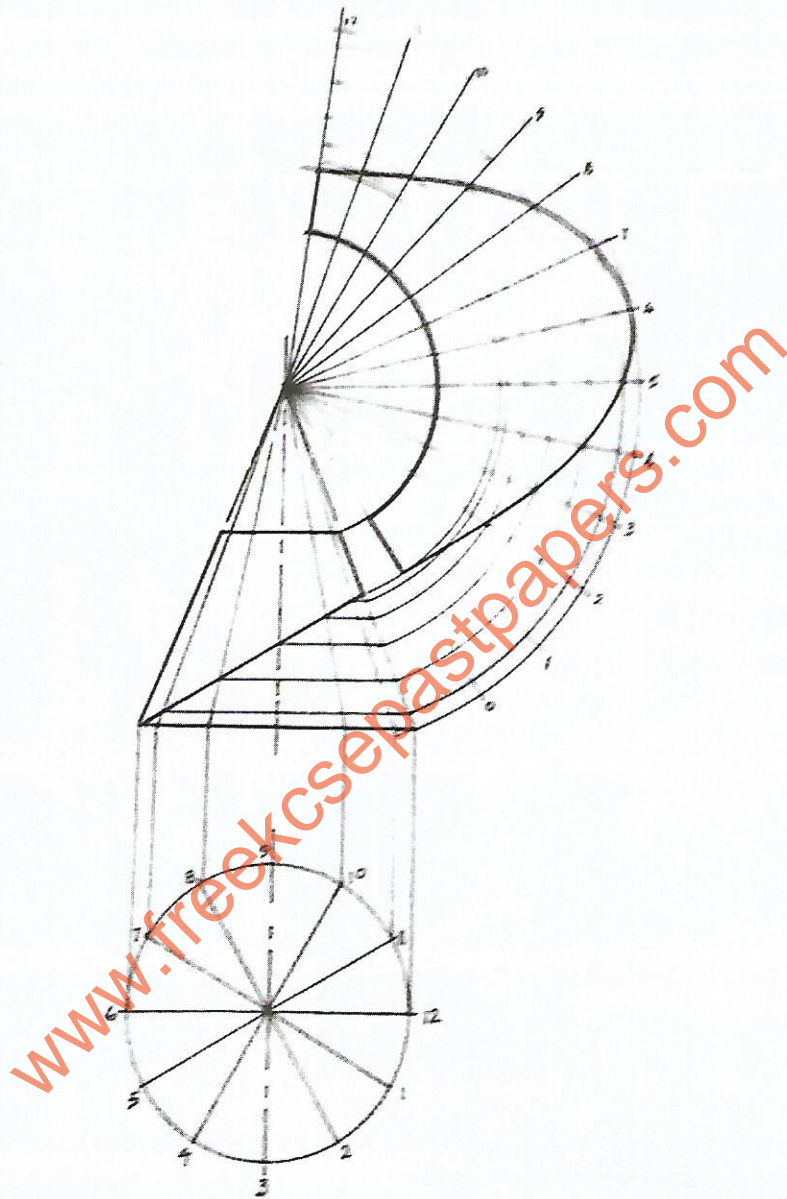
**Figure 6****Weakness**

Some candidates drew the development of a cylinder instead of a cone as in the question.

**Advice to teachers**

Teachers are advised to use models to demonstrate to the students how different solids are made e - plain how different developments are drawn. They should give students more exercises for practice thus more understanding of the topic.

Expected response



### Question 13

Figure 7 shows the front view of a house. Construct a diagonal scale in which 20mm represent 1m to read up to 5m. Use the scale to draw the view of the house.

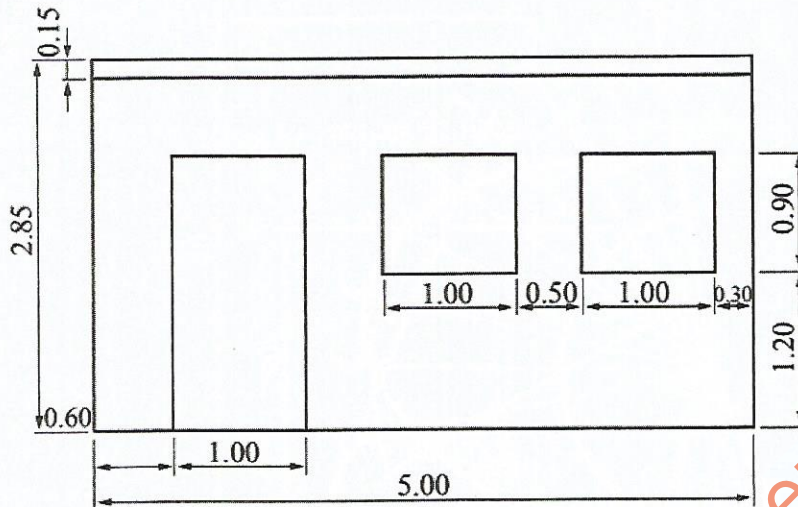


Figure 7

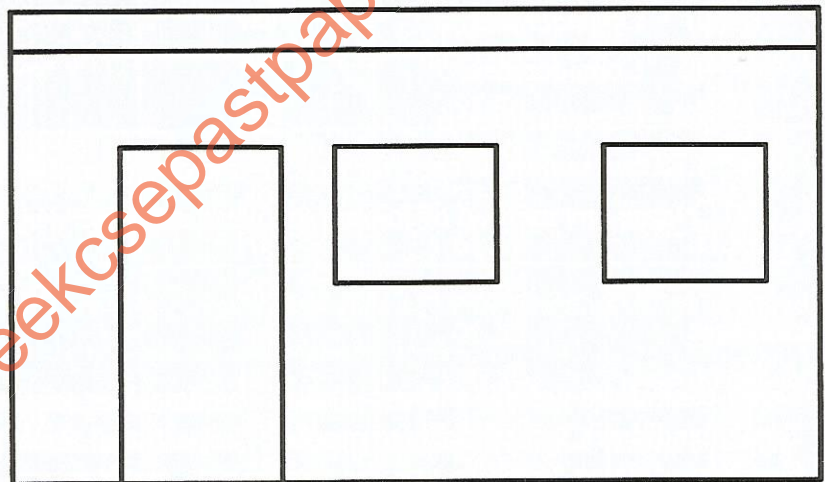
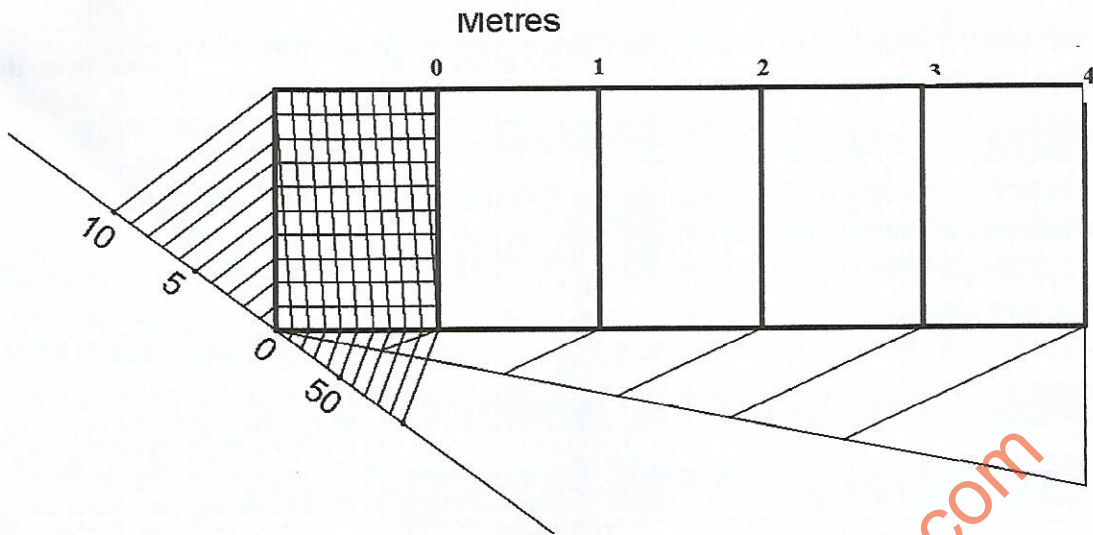
#### Weakness

Some candidates could not construct a diagonal scale and use it to draw the front elevation of a house as given in the question.

#### Advice to teachers

Teachers are advised to explain to the students the use of scales and give them more exercise in construction of different types of scales

Expected response





### 3.7.3 Drawing and Design Paper 2 (449/2)

This paper is always composed of one design question which must be attempted by all the candidates.

In 2022, the paper required the candidates to design a device that can be used to remove mud from the sole of a shoe considering that it should:

1. be able to scrape off the mud from the sole of shoes with ease.
2. be stable when in use.
3. have provision for collecting the mud.
4. be easy to remove the collected mud for quick disposal.
5. be easy to remove the mud that is stuck from the device
6. have an adjustable and a collapsible hand support.

**The tasks which the candidates were to carry out were as follows:**

1. Make free-hand pictorial sketches of two possible designs of the device.
2. Select one of the designs in (a) above and make a refined pictorial drawing.
3. Make detailed sketches to show each of the following:
  - (i) Consideration 4
  - (ii) Consideration 5
  - (iii) Consideration 6
4. List two materials used for making the device and state one reason for the choice of each.
5. Name one method of joining the parts and state where it is applied.

#### **Weaknesses**

- Some candidates did not address all the considerations required
- Some candidates lacked skills to produce proportional sketches of possible designs.
- Some candidates failed to use the appropriate mechanisms for the considerations given in the question.
- Some candidates were not specific when naming the materials to be used in the design while a few failed to state the reasons for the choice of material.

#### **Advice to teachers;**

- Give students a lot of practice and expose them to a variety of mechanisms
- Give the students more practice in pictorial drawings and sketches.
- Always insist on neatness, line work and proportionality in all the drawing assignments given to students.
- Encourage the student to adhere to the instructions given in the questions.
- Ensure that the entire syllabus is covered including topic of materials, their properties and methods of joining different parts