**Term 2 - 2022**

**DRAWING AND DESIGN (449/1)**

**FORM FOUR (4)**

**Time: 2½ Hours**

**Marking Scheme**

Section A (50 marks)

***Answer all questions in this section***

1. (a) (**3 marks**)
2. (a)

 (b)



1. (a). (**3 marks**)
* Use of the item to be fabricated or manufactured
* Availability of the material
* Durability of the material
* Cost of the material
* Weather conditions like internal or external
* Ease in the use of materials or workability

(b). Explain the meaning of the term **“alloy”** as applied in materials and give two examples ( **2marks**)

Alloy is a metal made from two or more metals example bronze, brass, and aluminum

1. State the importance of following steps in the design process. (**3 marks**)
2. Evaluation: Testing to see if it has satisfied the need and if not to find out where or why it has failed
3. Final drawing: used to manufacture the real object by the craftsman.
4. Mock-up: use to test or find out whether or not the design is satisfactory. Imperfections not seen when drawing may show up in mock-up.
5. Construct an ellipse using the rectangle method whose sides are 80mm

 by 45 mm. (**5 marks**)

1. Construct a regular octagon inside a square whose sides are 80mm. ( **5 marks**)



1. Two views of a machine component are shown below in **Figure 1**. Sketch the block in oblique taking **X-X** as the lowest point (**6 Marks**)



1. Draw an isometric circle whose diameter is 60mm using ordinate method. (4 marks)



1. Front elevation of a pentagonal pyramid truncated by the cutting plane **X\_X** is given in figure 2.

Sketch the auxiliary view and a plan. (7 marks)



1. Two views of a machine part are shown in **figure 3**. Sketch a two point perspective of the block. (7marks)



**Section B (20 Marks)**

**This is a compulsory question.**

**Students are advised not to spend more than 1 hour answering this question**



**Section C (30 Marks)**

 ***Answer any two questions from this section***





1. (a) Define the term involute. ( 2 marks)

(b) Draw an involute to a circle of with a diameter of 30mm. (8 marks)

(c) Draw a tangent to any point T on the involute. (5 marks)

Involute: Is **a curve that is obtained by attaching a string which is imaginary and then winding and unwinding it tautly on the curve given**

