2026

ENGINEERING DRAWING

(Theory)

Full Marks : 70

Pass Marks : 21

Time : Three hours

Instructions:

(i) Attempt all the questions.

(ii) All dimensions are in millimeters.

(iii) Missing and mismatching dimensions, if any may be suitably assumed.

(iv) Use both sides of the drawing sheet if necessary.

(v) Follow the SP: 46-2003 revised codes. (With first angle method of projection) if not mentioned.

(vi) In question 16, hidden edges or lines are to be shown in views without sections.

Answer the following Multiple Choice Questions and rewrite the correct choice on your drawing sheet. 1×8=8

1. A pentagon has :

(A) 8 sides (B) 4 sides

(C) 5 sides (D) 6 sides

2. The interior angle of a regular hexagon is :

(A) 120° (B) 60°

(C) 30° (D) 90°

P.T.O.

3. All sides of an equilateral triangle are :

(A) Perpendicular (B) Parallel

(C) Equal (D) Unequal

4. An acute angle is :

(A) Equal to 90° (B) More than 90°

(C) Less than 90° (D) All the above

5. In third angle projection, right side view is drawn on the :

(A) Right side of front view (B) Left side of front view

(C) Right side of top view (D) Left side of top view

6. In the 1st angle projection, the front view will be _____ the top view.

(A) above (B) below

(C) left side of (D) right side of

7. The angle difference between true scale and isometric scale is :

(A) 30° (B) 15°

(C) 45° (D) None of the above

8. If an isometric drawing is drawn with isometric scale then the drawings are called :

(A) Isometric view (B) Isometric projection

(C) Orthographic view (D) Orthographic projection

For Question numbers 9 and 10, two statements are given below - one labelled as Assertion (A) and the other as Reason (R). Select the correct answer to these questions from the codes (A), (B), (C), and (D) as given below:

(A) Both Assertion (A) and Reason (R) are true and reason (R) is the correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are true and reason (R) is not the correct explanation of the Assertion (A).

(C) Assertion (A) is true but Reason (R) is false.

(D) Assertion (A) is false but Reason (R) is true.

9. Assertion(A) : The orthographic projection of a sphere is always a circle. 1

   Reason (R) : A sphere is a solid without any edges or vertices, so its projection onto any plane will be a circular outline.

10. Assertion (A) : When a line is inclined to both H.P. (Horizontal Plane) and V.P. (Vertical Plane), its true length is visible in one of the projection planes. 1

    Reason (R) : The true length of a line is only visible when it is parallel to the plane of projection, which is not the case when the line is inclined to both planes.

Answer the following questions :

11. Draw a transversal common tangent to two equal circles, of 25 mm diameter, having their centers E and F 45 mm apart. 6

12. Draw the involute of a circle of diameter = 28 mm for one complete revolution of a circle. 6

13. Draw the total development of a cylinder of 28 mm diameter and 40 mm height, with its axis perpendicular to HP. Give all dimensions. 5

14. Construct the isometric projection of an equilateral triangle of 60 mm sides, having one of its side perpendicular to HP, and its surface

    (i) Parallel to V.P.

    (ii) Perpendicular to V.P.

    Indicate the direction of viewing. Give dimensions. 8

15. A Hexagonal Pyramid of 25 mm base edges and 70 mm axis, resting on H.P. so that its axis is inclined to H.P. at 30° towards the left and two opposite base edges are parallel to V.P. Project its front view and top view, keeping its axis parallel to V.P. 10

16. In a manufacturing industry, the firm's engineers are required to create orthographic projections of various machine blocks to ensure accurate representation of their dimensions and features. Orthographic projections involve creating multiple two - dimensional views of the three - dimensional machine blocks. These projections are crucial for fabricating the components accurately and ensuring to fit together as designed. If you were one of the engineers, complete the following task from the direction of the arrow. Draw the following views to full size scale (1:1) from the block shown in fig. 1.

    (i) Front view looking in the direction of arrow A 10

(ii) Top view

(iii) Side view

Give all dimensions.

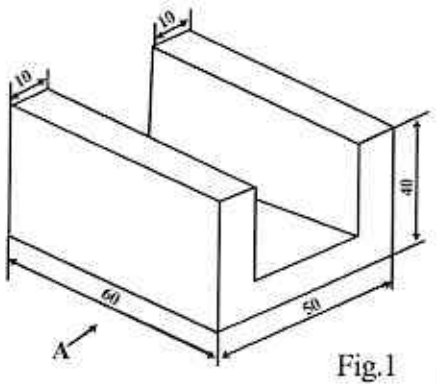

Fig.1

17. Project the front view and sectional top view of a vertical hexagonal pyramid, of 25 mm base edges and 60 mm height, resting on HP on its hexagonal base with two opposite edges of its base, parallel to VP, sectioned horizontally, 30 mm above its base and parallel to it. 15

OR

Project the front view and sectional top view of a vertical cone of 60 mm base diameter and 60 mm axis resting on HP on its base, it is sectioned by a horizontal plane, intersecting the axis on the middle i.e, 30 mm above its vertex. 15