2025

# 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.*

***Answer the following Multiple Choice Questions and rewrite the correct choice on your drawing sheet.***

1. How many minimum points are required to make a circle, if radius is not given? 1

(A) 5 (B) 2

(C) 3 (D) 4

2. An octagon has : 1

(A) 4 sides (B) 8 sides

(C) 7 sides (D) 9 sides

P.T.O.

3. The interior angle of regular pentagon is : 1

(A) $100^\circ$ (B) $105^\circ$

(C) $108^\circ$ (D) $120^\circ$

4. In third angle projection, the left side view is drawn on the : 1

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

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

5. Which dimension is common in front view and top view? 1

(A) Length (B) Width (Breadth)

(C) Height (D) Longitudinal

6. On which plane the top view is projected? 1

(A) Horizon (B) Frontal

(C) Profile (D) Base

7. An acute angle is : 1

(A) Equal than $90^\circ$ (B) More than $90^\circ$

(C) Less than $90^\circ$ (D) Greater than $90^\circ$

8. An isometric plane is bounded by : 1

(A) Axes (B) 3 axes

(C) 4 axes (D) 5 axes

***For Question number 9 and 10, two statements are given- one labeled as Assertion (A) and the other labeled 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, but 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) : In orthographic projection, the front view of an object is projected onto the vertical plane (VP). 1

   Reason (R) : The vertical plane is perpendicular to the horizontal plane (HP).

10. Assertion (A) : In isometric projection, the angles between the projection axes are all equal. 1

    Reason (R) : The angles between the projection axes in isometric projection are 120 degrees.

***Answer the following questions :***

11. Draw the development of an equilateral triangular prism of base side 30 mm and 40 mm height resting on its base on the H.P, with a rectangular face parallel to V.P. and closer to it. Give all dimensions. 5

12. Draw an exterior common tangent to two unequal circles of 30 mm and 22 mm diameter respectively, having their centre E and F, 35 mm apart. 6

13. Construct a smooth ellipse, having its major axis AB = 80 mm and minor axis CD = 56 mm, by concentric circles method. 6

14. Construct the isometric projection of a regular hexagon of 30 mm sides, with its surface horizontal and two of its opposite sides perpendicular to V.P. Indicate the direction of the viewing. Give all dimensions. 8

15. An engineering firm is working on detailed technical drawings for a new manufacturing project. 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 they fit together

as designed. If you were one of the engineers, complete the following task from the direction of the arrow. Draw to scale 1:1, the following views of the machine block shown in Fig-1 . 10

A. Top View

B. Side View

C. Front View in the direction of arrow.

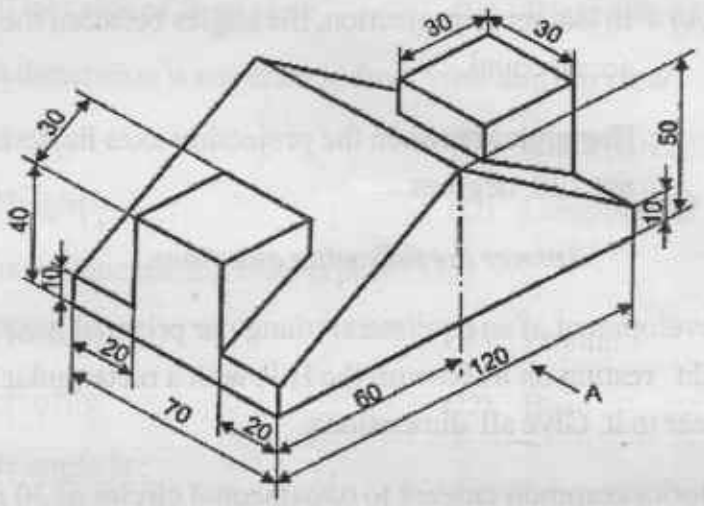


Fig-1

16. A line AB has its end A, 5 mm from V.P. and 10 mm from H.P. end B is 40 mm from H.P and 25 mm from V.P. The distance between its end projectors is 50 mm. Draw its front view and top view. Also its true length and true length of inclination with H.P and V.P. Using trapezoid method.Follow first angle method of projection. 10

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 H.P. on its hexagonal base, with two opposite edges of its base, parallel to V.P., section horizontally, 30 mm above its base and parallel to it. 15

*OR*

A cylinder of 50 mm diameter and 60 mm height, is resting on H.P. on one ends, it is cut by a vertical plane, parallel to V.P. Project its top view and sectional front view. 15