[Total No. of Questions - 9] [Total No. of Printed Pages - 3]

Dec-22-0102

ME-102 (Engineering Drawing & Graphics)

B.Tech-1st (CBCS)

Time : 3 Hours **Max. Marks : 40**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note: Candidates are required to attempt five questions in all, selecting one question from each sections A, B, C and D of the question paper. However, Section E is compulsory and attempt all the subparts of the questions in section E.

SECTION A

1. (a) Trace a conic section when the distance of the focus from the Directrix is 40mm and eccentricity is equal to 9/7. Name the curve. Draw a tangent and normal to the curve from a point on it, which is at a distance of 30mm from the Focus. (2.5)

   (b) The distance between two stations by road is 200 km and it is represented on a certain map by a 5 cm long line. Find the R. F. and construct a diagonal scale showing a single kilometer and long enough to measure up to 600 km. Show a distance of 467 km on this scale. (2.5)

   or

2. (a) The front view of a line AB 80 mm long measures 55 mm while its top view measures 70 mm. End A is in both HP and VP. Draw the projections of the line and find its inclinations with the reference planes. (2.5)

   (b) A pentagonal plane with a 35 mm side is resting on one of its edges in the H.P. with its surface perpendicular to the V.P. The corner opposite to the edge on which it is resting is 40 mm above the H.P. Draw its projections. (2.5)

SECTION B

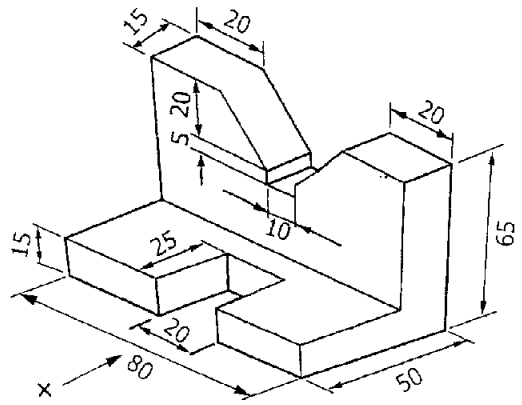
3. A square pyramid with a side of a base of 40 mm and a height of 80 mm is suspended freely from a point on a slanted edge at a distance of 20 mm from its apex. The top view of the axis of the pyramid is inclined at 30° to the XY line. Draw the projections.(5)

   or

4. A cylinder, 65 mm diameter and 90 mm long has its axis parallel to the H.P and is inclined at 30° to V.P. It is cut by a vertical section plane in such a way that the true shape of the section is an ellipse having a major axis, 75 mm long. Draw its sectional front view and the true shape of the section. (5)

SECTION C

5. Draw the FRONT VIEW, TOP VIEW and RIGHT-SIDE VIEW for the given figure. (5)



or

6. A frustum of a cone with 30 mm as top diameter, 50 mm as bottom diameter and 60 mm long is placed vertically on a square slab of side 70 mm and 30 mm thick, such that both the solids have a common axis. Draw the isometric projection of the combination of solids. (5)

[P.T.O.]

SECTION D

7. A square pyramid, having a base with a 30mm side and 60mm height is resting on the base in HP such that one of the base sides is parallel to the VP. It is cut by a plane perpendicular to VP and 45 degrees inclined to HP and cutting the axis of the solid 20mm from the top. Draw development of the lateral surface of the bottom part of the solid. (5)

or

8. A vertical square prism with 50 mm sides and 100 mm length has its side faces equally inclined to the VP. It is completely penetrated by a horizontal cylinder 60 mm in diameter and 100 mm in length. The axes of the two solids bisect each other perpendicularly. Draw the projections showing curves of the intersection when the plane containing the two axes is parallel to the VP. (5)

SECTION-E (Compulsory Question)

9. Write short answers of the following all questions. (10×2 = 20)
   a. Divide an 80mm long straight line into seven equal parts.
   b. Construct a scale of 1:6 to show decimeters and centimeters to read up to 1m and show on it a length of 6.9 dm.
   c. Draw the involute of a triangle of 25 mm side for one convolution.
   d. Explain orthographic projection and what is the terminology used in it?
   e. Define section plane and section surface? What is meant by the sectional top view and sectional front view?
   f. State the difference between the first angle and third angle projections, draw any example.
   g. Sketch projections of a point 20mm below HP and 40mm behind VP.
   h. Difference between isometric view and isometric projections.
   i. What is the purpose of sectioning in engineering practice?
   j. Explain the difference between Parallel line and Radial line methods.