hexagonal prism. The axis of the square prism intersects and bisects the axis of the hexagonal prism when produced. One of the base edges of the square prism is parallel to the VP. Draw an isometric projection of the setup. **8**

Section D

7. A pentagonal prism, having a base with a 30 mm side and 60 mm height is resting on the base in HP such that one of the rectangular faces 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 10 mm from the top. Draw development of the lateral surface of the bottom part of the solid. **8**

8. A vertical cone 80 mm diameter of base and axis 100 mm long is penetrated by a vertical cylinder of 60 mm diameter and 100 mm long such that the top circular end of the cylinder contains the apex of the cone and a plane perpendicular to both HP and VP containing the axes of both the solids and the axis of the cylinder is at a distance of 10 mm from the axis of the cone and is towards the observer. Draw the top and front view of the solids showing the curves of intersection. **8**

Roll No. ....   **Total Pages : 05**

July-22-00200

B. Tech. EXAMINATION, 2022

Semester I (CBCS)

ENGINEERING DRAWING AND GRAPHICS

ME-102

Time : 3 Hours   *Maximum 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 : Attempt *Five* questions in all, selecting *one* question from each Sections A, B, C and D. Q. No. **9** is compulsory.

Section A

1. (a) A fixed-point F is 7.5 cm from a fixed straight line. Draw the locus of a point P moving in such a way that its distance from the fixed straight line is equal to its distance from F. Name the curve. Draw the tangent and normal at a point 6 cm from F. **4**

(b) A distance of 30 cm measured on topography represents 450 m. Construct a diagonal scale showing divisions of 50 cm capable of measuring 300 m. Mark on your scale the distances 255.5 m and 177.5 m. **4**

2. (a) A line EF 85 long has its ends 25 mm above HP and 20 mm in front of V.P. The top and front views of the line have lengths of 55 mm and 70 mm respectively. Draw the projections of the line and find its inclinations with the V.P. and H.P. **4**

(b) A semi-circular plane of diameter 70 mm has its straight edge on the V.P. and the surface makes an angle of 30° to V.P. Draw the projections. **4**

Section B

3. A square prism side of base 40 mm and axis 60 mm long rests with its base on H.P. such that one of its rectangular faces is inclined at 30° to V.P. A section plane perpendicular to H.P. and inclined at 60° to V.P. passes through the prism such that the rectangular face which making 60° with V.P. is cut into halves. Draw the top view sectional front view and true shape of section. **8**

4. A tetrahedron of edge 50 mm long is standing on one of its corners on the ground with one of the edges connected with this corner making 60° with the ground and one of the triangular faces connected with this corner making an angle of 30° with the V.P. Draw the projection of the object. **8**

Section C

5. Draw the Front view, Top view and Right-side view for the given figure : **8**
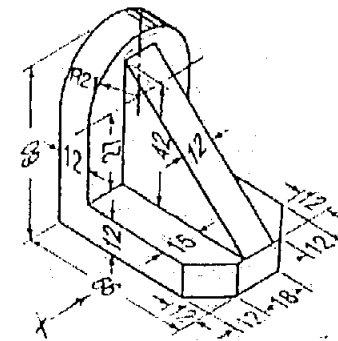
6. A hexagonal prism with base edge 30 mm and height 70 mm long is resting on its rectangular face on the ground with its axis parallel to the VP. A square prims of 20 mm base edge and height 40 mm rests on its base on the top rectangular face of the

(Compulsory Question)

9. Attempt any·*eight* short questions :   1×8=8

   (a)   Define Cycloids, Epicycloids and hypocycloids.

   (b)   Construct a plain scale of 1 : 60 to show metres and decimetres and long enough to measure up to 6 metres. Show a distance of 3.7 metres.

   (c)   What are solids of revolution ? Explain with examples.

   (d)   What is meant by AVP and AIP ? What is drawn on AVP and AIP ?

   (e)   A plane cuts a right circular cone is cut by a plane parallel to the base and perpendicular to the axis. What is the true shape of the section ?

   (f)   What is meant by the true shape of the section and how to obtain the true shape of the section ?

   (g)   What is an isometric scale ?

   (h)   Draw the isometric view of a semi-circular lamina of 50 mm diameter.

   (i)   What is the purpose of sectioning in engineering practice ?

   (j)   What precautions should be taken while obtaining the development of pyramids ?