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B. Tech 1st Semester Examination

Engineering Graphics Drawing (O.S.)

ME-1001

Time : 3 Hours   **Max. Marks : 100**

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 : A drawing Sheet is needed to attempt this question paper. Attempt any five questions in all, selecting one question each from section A, B, C & D. Section E (Question 9) is compulsory.

SECTION - A

1. (a)   On a map, the distance between two points is 14 cm. The actual distance between the points is 20 km. Draw a diagonal scale to read this map in kilometres and hectometres. The scale should be long enough to read upto 25 km. Also show a distance of 17.6 km on this scale. **(10)**

    (b)   A line AB, 60 mm long, has its end A 15 mm behind VP and 10 mm below HP. It is inclined at 45° to the HP and 30° to the VP. Draw its projections when; (i) the lines lies in third quadrant, (ii) the end B lies in first quadrant. **(10)**

2. (a)   Draw a vernier scale of R.F.= 1/25 to read centimetres and long enough to read upto 4 metres. Show on the scale the distances of 2.39 metres and 0.91 metre. **(10)**

    (b)   A line AB, 75 mm long makes an angle of 60° with the HP and lies in an auxiliary vertical plane (AVP) which makes an angle of 45° with the VP. Its end A is 9 mm away from both the HP and the VP. Draw the projections of the line, determine its inclination with the VP. Also locate its traces. **(10)**

SECTION - B

3. (a) A hexagonal prism, edge of base 25 mm and height 56 mm, rests on one of its base edges in HP such that its axis is parallel to the VP. Draw the projections of the solid when; (i) its base makes an angle of 45° with HP, or (ii) when its axis is inclined to HP at 45°, or (iii) when the rectangular face, containing the base edge, is inclined to HP at 45°.

(10)

    (b) A pentagonal pyramid, base 25 mm side and axis 50 mm long has one of its triangular faces in the V.P. and the edge of the base contained by that face makes an angle of 30° with the H.P. Draw its projections. **(10)**

4. (a) A square prism, base 25 mm side and height 50 mm, has its axis inclined at 45° to the ground and has an edge of its base, on the ground and inclined at 30° to the V.P. Draw its projections. **(10)**

    (b) A right regular tetrahedron, edge of base 30 mm, is held on ground plane on one of its base corner points such that the slant edge containing the base edge corner is inclined at 60° to HP and the base edge opposite the corner point inclined at 45° to the VP. Draw its projections in third angle.

(10)

SECTION - C

5. (a) A right circular cone, diameter of base 56 mm and height 65 mm, rests on its base on H.P. A section plane perpendicular to VP and inclined to HP at 45°, cuts the cone meeting its axis at a distance of 36 mm from its base. Draw its front view, sectional top view and true shape of the section. **(10)**

    (b) A right regular hexagonal prism, edge of base 20 mm and height 50 mm, has a circular hole of 20 mm diameter, drilled centrally through it, along its axis. Draw its isometric projection. **(10)**

6. (a) A hexagonal pyramid, base 28 mm side and axis 55 mm long, has a triangular face on the ground and the axis parallel to the V.P. It is cut by a horizontal section plane which bisects the axis. Draw the front view and sectional top view and develop the surface of the cut-pyramid.

(10)

(b) Draw the isometric drawing of the frustum of a right regular hexagonal pyramid, side of base hexagon is 20 mm, side of top hexagon is 10 mm and height of the frustum is 40 mm. (10)

SECTION - D

7. (a) Isometric view of a block is shown in Fig. 1 where its visible surfaces are labelled by letters. Looking in the direction of the arrow, draw its front view, right side view and top view. Also identify the visible surfaces by corresponding letters in the orthographic views. **(10)**

(b) A right regular square prism, of 30 mm base edge and 60 mm height, rests on its base on HP such that its vertical faces are equally inclined to VP. It has a horizontal circular hole of 30 mm diameter drilled centrally through it such that the axis of the hole cuts both the diagonally opposite vertical edges. Develop the lateral surface of the prism, showing all construction lines. **(10)**
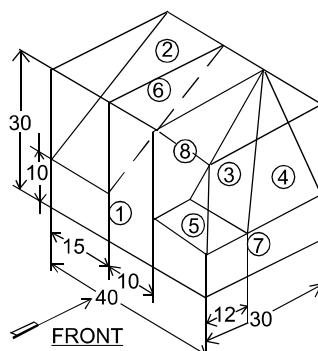

Fig. 1

[P.T.O.]

8. (a) A right regular pentagonal pyramid, edge of base 30 mm and height 60 mm, rest on its base on ground or HP such that one of its base edges is perpendicular to the VP. Draw its projections and develop its lateral surface. **(10)**

(b) A vertical cylinder of ϕ 50 mm and height 80 mm, resting on its base in HP is completely penetrated by another cylinder of the same dimensions. The axes of the two cylinders bisect each other at right angles. Draw their projections showing lines of intersection. **(10)**

SECTION - E
(Compulsory Question)

9. Write short answers of the following:

(a) What is the difference between a plain scale and a diagonal scale? Explain.

(b) What is the principle of sectioning?

(c) Show the use of section lines by drawing the sectional plan of a hollow cylindrical prism placed on its base on HP and cut by a horizontal section plane.

(d) Draw the traces of an Auxiliary Inclined Plane (AIP).

(e) What is an isometric view?

(f) What are the two important types of auxiliary planes?

(g) Draw the projections of the frustum of a square pyramid resting on its base on HP.

(h) Define the following: (i) Ruled Surface & (ii) Warped Surface.

(i) How are primary auxiliary views classified?

(j) Define two methods used to determine line of intersection.
(2×10=20)