21314

4 Hours/100 Marks

Seat No.

Instructions: (1) ***All*** questions are ***compulsory***.
(2) Figures to the ***right*** indicate ***full*** marks.
(3) Assume suitable data, if ***necessary***.
(4) ***Use*** only H/2H grade pencils.
(5) Line work and ***cleanliness*** will be given due weightage.
(6) ***Retain*** all construction lines and nomenclature.
(7) ***Use*** first angle method of projection.

MARKS

1. a) Solve the following : **10**

   A pictorial view of an object is shown in Fig. 1 Draw the following views :

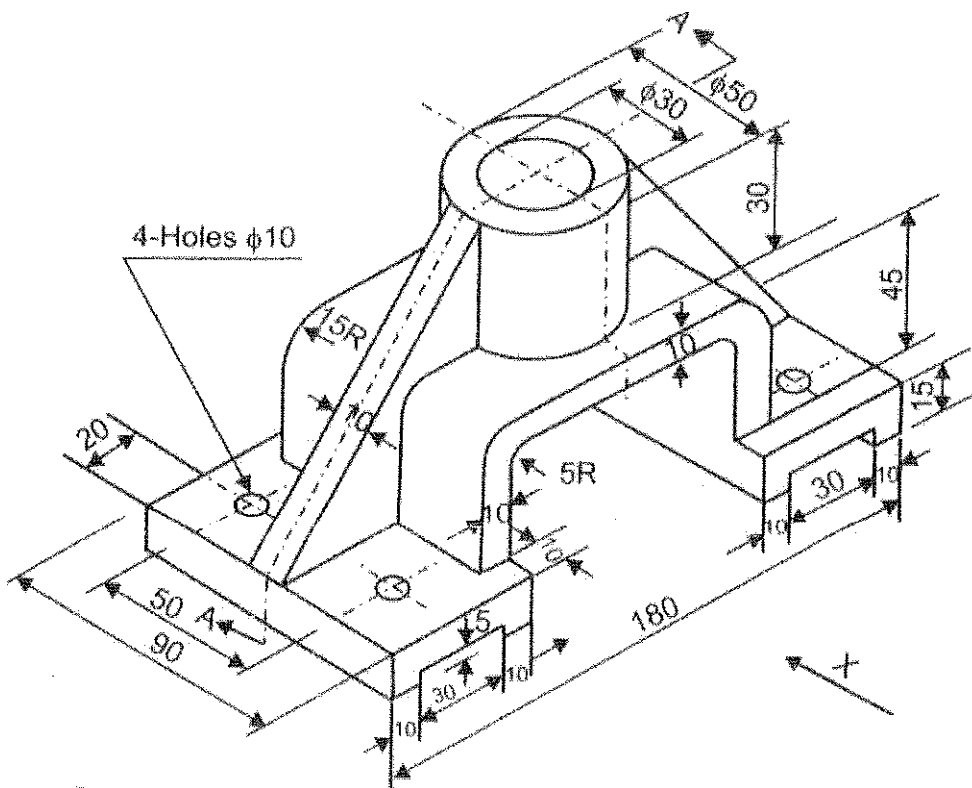   i) Sectional front view 'along Section A-A' **5**

   ii) Top view **5**

Fig. 1

b) Solve the following : **10**

Fig. 2 shows front view and top view of an object. Draw the following views :

  i) Sectional front view. Section A-A **4**
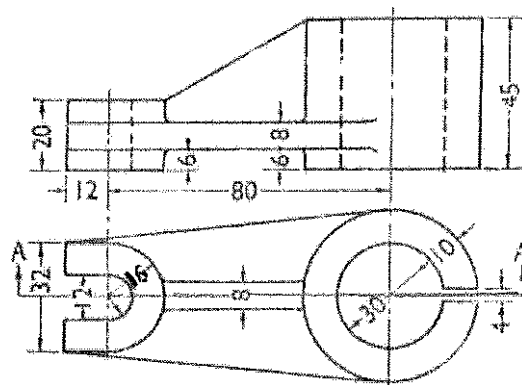
  ii) Top view **2**

  iii) Left hand side view **4**

Fig. 2

2. a) Solve the following : **8**

A line AB, 60 mm long, has its end A 25 mm above H.P. and 30 mm in front of V.P. It is inclined at 30° to the H.P. and at 45° to the V.P. Draw its front view and top view.

b) Solve **any one** : **8**

  i) A circular plate of diameter 45 mm has its one point on circumference resting on the H.P. It is inclined at 60° to the V.P. and perpendicular to H.P. Its centre is 40 mm in front of the V.P. Draw the three views. Neglect the thickness of the plate.

  ii) A hexagonal plate of negligible thickness is resting on one side on the H.P. The plate is inclined at 45° to V.P. and perpendicular to H.P. The side of plate = 30 mm. Draw the three views.

3. Solve **any two** : **16**

  a) Draw the projections of a cone, base 75 mm diameter and axis 100 mm long, lying on the H.P. on one of its generators with the axis parallel to the V.P. Draw front view and top view.

MARKS

b) Draw the projections of a pentagonal prism base 30 mm side and axis 60 mm long, resting on one of its rectangular faces on the H.P., with the axis inclined at 45° to the V.P. Draw front view and top view.

c) A tetrahedron of 45 mm side is lying on one of its triangular faces on the H.P. with one edge of that face making an angle of 30° with the V.P. It is tilted on one of its base corner in such a way that the base edge, opposite to that corner is parallel to the H.P. and 20 mm above H.P. Draw its projections and find the angle made by its axis with the H.P. Draw front view and top view.

4. Solve **any two** :   **16**

   a) A right circular cone of 60 mm base diameter and axis 80 mm long is resting on its base on the H.P. It is cut by the Section plane inclined at 45° to H.P. and perpendicular to V.P., bisecting the axis of cone. Draw

      i) Front view.   **2**

      ii) Sectional top view.   **4**

      iii) True shape of the section.   **2**

   b) A pentagonal pyramid has its base on the H.P. and the edge of the base nearer the V.P., parallel to it. A vertical section plane inclined at 45° to the V.P., cuts the pyramid at a distance of 6 mm from the axis. Base of the pyramid 30 mm side; axis 50 mm long. Draw

      i) Top view.   **2**

      ii) Sectional front view.   **4**

      iii) True shape of the section.   **2**

   c) A cylinder of 40 mm diameter, 60 mm height and having its axis vertical is cut by a section plane, perpendicular to the V.P; inclined at 45° to the H.P. and bisecting the axis. Draw

      i) Front view.   **2**

      ii) Sectional top view.   **2**

      iii) True shape of the section.   **4**

5. Solve **any two** : **16**

   a) Draw the development of lateral surface of the cylinder having 60 mm diameter and axis 90 mm long. A square hole of 25 mm side is drilled in the cylinder, having axis perpendicular to V.P. and all sides of hole equally inclined to H.P. The center of hole is 45 mm above H.P. on the axis. Develop the surface of cylinder with hole.

   b) A triangular prism is resting on the H.P. with one of its rectangular face perpendicular to V.P. It is cut by a cutting plane perpendicular to V.P. and inclined at 30° to the H.P. passing through corner of top triangular face. Draw the development of lateral surface of the bottom portion of the prism. Height of prism is 90 mm and side of base is 45 mm.

   c) Draw the development of lateral surface of part 'A' and 'B' of right angle elbow shown in Fig. 3.
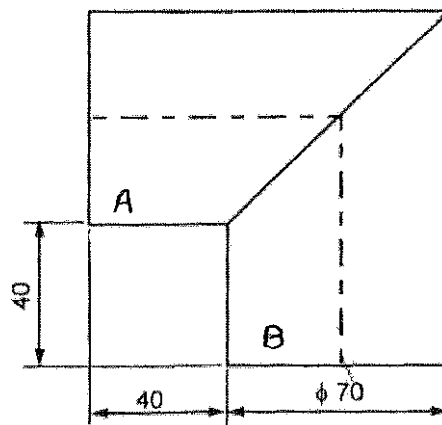

Fig. 3

6. Draw the neat and proportionate free hand sketches of **any four** of the following : **16**

   a) Buttress thread profile.

   b) Hexagonal headed bolt.

   c) Lock nut.

   d) Lewis foundation bolt.

   e) Single riveted lap joint.

   f) Wing nut.