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 of Non-programmable Electronic Pocket Calculator is permissible.

(5)   Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1.   (a)   A pictorial view of an object is shown in figure No. 01. (Use First Angle Method). Draw the following views.

(i)   Sectional front view (Section A-A)   **6**

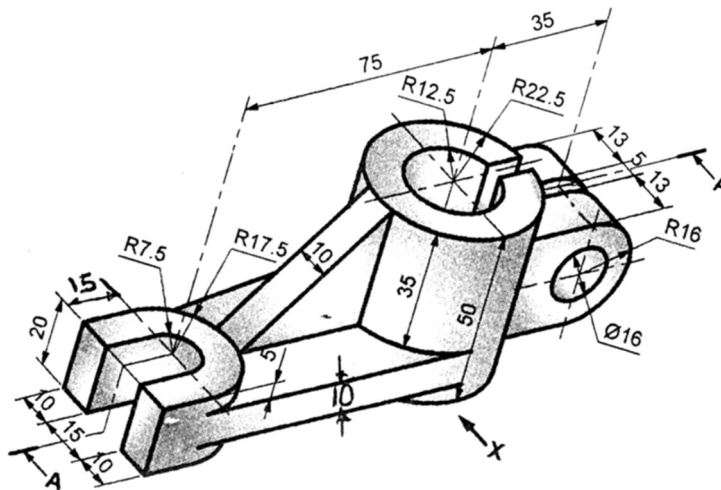(ii)   Top view   **4**

Figure No. 01

(b) Figure No. 02 shows front view and side view of an object. Draw the following views of the object. (use First Angle Method)
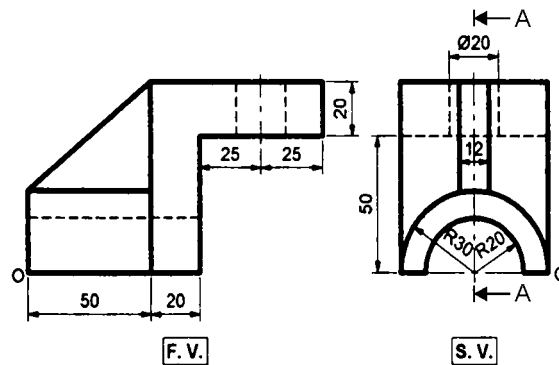

Figure No. 02

(i)   Sectional front view along section A-A. **4**

(ii) Top view **4**

(iii) Side view **2**

2. (a) A line PQ 80 mm long has its end 'P' is in H.P. and 25 mm infront of V.P. The line is inclined at 45° to H.P. and 30° to V.P. Draw its projection and measures EL, PL and inclinations made by it. **8**

(b) **Solve any ONE of the following :** **8**

(i)   A rectangular plate having smallest side 30 mm & longer side 60 mm is kept on the H.P. on its smaller side with surface perpendicular to V.P. It is inclined to H.P. in such a way that top view appears as a square. Draw three views and find inclination of plane with H.P.

(ii) A hexagonal plane of side 30 mm is kept on the H.P. on one of its corners with the corner opposite to the corner on H.P. 40 mm above H.P. Diagonal passing through the corners is parallel to V.P. Draw three views of the hexagonal plane and find its inclination with the H.P.

3. **Solve any TWO of the following :** 16

   (a) A cylinder has base diameter 40 mm and axis 60 mm is kept on the V.P. on a point of its base circle such that its base makes an inclination 60° to V.P. with axis parallel to H.P. Draw projections of cylinder.

   (b) A square pyramid having 40 mm side of base and 70 mm height of axis is suspended by a string attached to the one of the corners of the base. Draw the projections of pyramid if the axis is parallel to V.P.

   (c) A cone has base diameter 40 mm & axis 60 mm long, is kept on the HP on a point of its base circle such that its axis is inclined 45° to H.P. and parallel to V.P. Draw its projection by using Auxiliary plane.

4. **Solve any TWO of the following :** 16

   (a) A cone has base 60 mm dia. and axis 70 mm long has its base on the H.P. It is cut by section plane, perpendicular to V.P., inclined at 75° to H.P. and passing through a point 25 mm from apex. Draw F.V. (02), Sectional T.V. (04), True Shape of Section (02).

   (b) A Square prism side 40 mm and axis 70 mm is kept on the H.P. with side of base equally inclined to V.P. It is cut by section plane in such a way that true shape of the section is largest possible Isosceles triangle. Draw front view (02), Sectional T.V. (04), and true shape of section (02).

   (c) A tetrahedron at 60 mm edges stands on a face on H.P. with an edge contained by that face perpendicular to V.P. It is cut by section plane perpendicular to V.P., inclined at 30° to H.P. and passing through a corner of the base. Draw the front view (02), Sectional top view (04), True shape of section (02).

5. **Solve any TWO of the following :** 16

   (a) A square prism side 40 mm, axis 80 mm kept on the H.P. with side of base equally inclined with V.P. A circular hole of diameter 40 mm is drilled through the prism such that axis of hole perpendicular to V.P. and parallel to H.P. and bisects the axis of square prism. Draw development of lateral surface of prism.

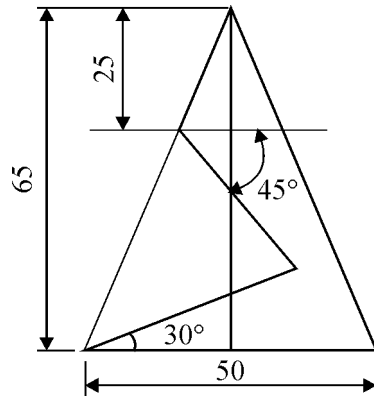(b) Figure No. 3 shows the F.V. of a square pyramid. Draw its development of lateral surface and add Top view.

Figure No. 03

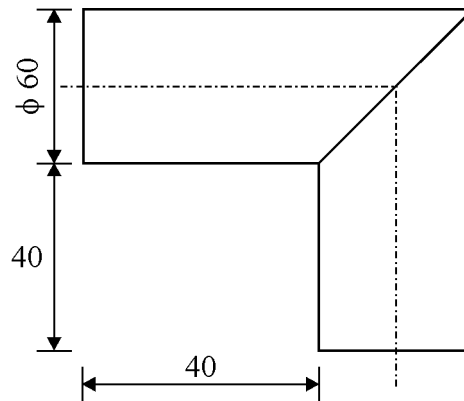(c) Figure No. 4 shows the elbow joint at two pipes, draw the development of the lateral surface.

Figure No. 04

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

 (a) Acme thread

 (b) Hexagonal Nut

 (c) Flange coupling

 (d) Woodruff key

 (e) Square headed bolt

 (f) Rag foundation bolt