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F.E. (Sem - II) (Revised Course 2016-17)
EXAMINATION MAY/JUNE 2019
Engineering Graphics

[Duration : 4 Hours] **[Max. Marks : 100]**

Instructions:
1. Answer **FIVE** questions. At least **TWO** from **PART – A**, TWO from **PART – B** and **ONE** from **PART – C.**
2. **MISSING** data, if any may be suitably **ASSUMED.**
3. Figures to **RIGHT** indicate **FULL** marks.

PART A

Answer ANY TWO questions.

Q.1 A) The major axis AB of an ellipse is 140 mm long with P as its midpoint. The foci F1 and F2 of the ellipse are 48 mm away from the midpoint P. Draw the ellipse and find the length of the minor axis. **10**

B) A line AB, 54 mm long, has its end A in the VP and 24 mm above the HP. The end B is in the HP and 36 mm in front of the VP. Draw the projections of line AB and determine its inclination with the HP and the VP. **10**

Q.2 A) A rhombus shaped plate of negligible thickness having diagonals of 60 mm and 40 mm respectively is resting on a corner in the HP. The longer diagonal is parallel to VP and inclined to HP in such a way that the top view appears as a square and the shorter diagonal is inclined to the VP by 45^0. Draw the front view and the top view. Also determine the angle made by the plate with the HP **10**

B) A horizontal metallic platform is 5m long and 3.5 m wide. It is suspended from a hook by means of chains attached at its four corners. The hook is situated vertically above the centre of the platform and at a distance of 6 m above it. Determine graphically the length of each chain and the angle which it makes with the platform. Assume the thickness of the platform and the chain to be equal to that of a line. **10**

Q.3 A) ABC is a thin triangular plate with the edge AB lying in the HP. The point A is 12 mm in front of the VP. The distance between the projectors of A and B is 42 mm. the sides AB, BC and CA measure 54 mm , 60 mm, and 48 mm respectively the corner C is 36 mm above the HP. Draw the projections of the triangular plate. **10**

B) A right regular tetrahedron of side 60 mm rests on one of its edge in the HP such that the face containing this edge makes an angle of 45^0 to the HP and the edge makes an angle of 30^0 to the VP. Draw its projections. **10**

PART B

Answer ANY TWO questions

Q.4 A) A right regular square prism, axis 110 mm long is resting on its base in the HP with the edges of the base equally inclined to the VP. The prism is cut by an auxiliary inclined plane (AIP) passing through the midpoint of the axis in such a way that the true shape of the section is rhombus having diagonals of 100 mm and 50 mm. Set the required cutting plane, draw the front view, sectional top view and true shape of the section. Also find the inclination of the cutting plane with the HP and length of the side of the square base. **10**

B) A semicircle of 160 mm diameter is the development of the lateral surface of a right circular cone. A largest possible hole is inscribed in the semicircle. Draw the projections of cone with the hole. (FV, TV) **10**

Q.5 A right regular pentagonal pyramid of base side 25 mm and axis 60 mm long is resting on one of its triangular face on the HP such that its axis is parallel to VP. It is cut by an auxiliary vertical section plane perpendicular to HP and inclined 30^0 to the VP and bisecting the top view of the axis such that the top part containing the apex is removed. Draw the sectional front view, top view, true shape of the section and development of the surface of the remaining portion of the pyramid. **20**

Q.6 A) Figure FIG. 6A shows the pictorial view. Draw the following views using first angle projection method. **10**

I. Front view looking in direction of arrow X

II. Top view

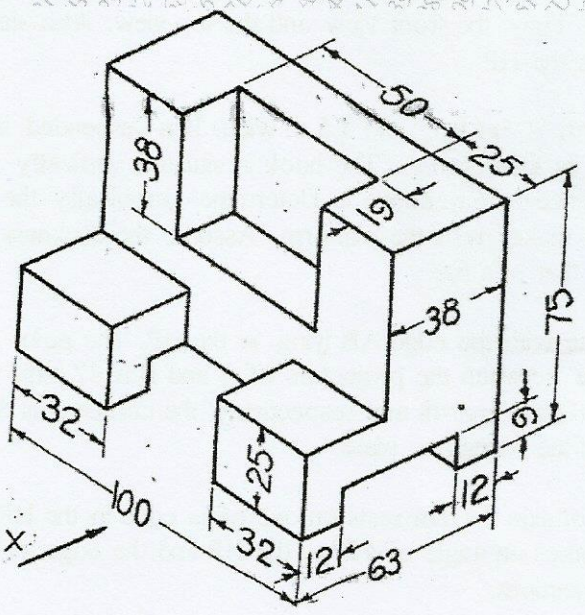

FIG. 6A

B) Two orthographic views are given in FIG. 6B below. Draw an isometric view. **10**

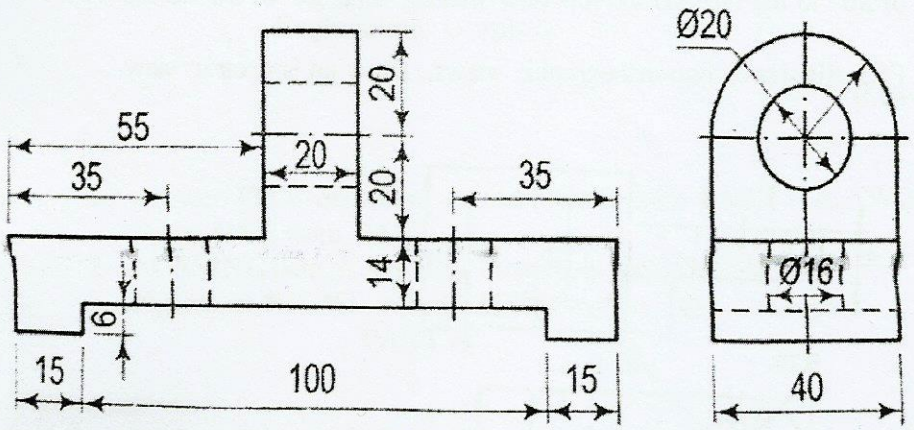

FIG. 6B

PART C

Answer ANY ONE question.

Q.7 A) A circle of 40 mm diameter rolls on a straight line without slipping. In the initial position, the diameter AB of the circle is parallel to the line on which the circle rolls. Draw the path traced by the points A and B for one complete revolution of the circle. **10**

B) FIG. 7B shows the pictorial view. Draw the following views using first angle projection method. **10**

I. Sectional Front view in the direction of Arrow X along A-A
II. Top view.

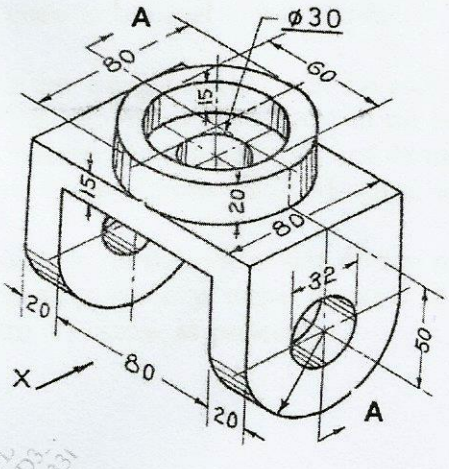

FIG. 7B

Q.8 A) A cylinder of base diameter 45mm and height 70 mm is resting on the HP on a point on the circumference of its base. Draw the projections of the cylinder when its axis makes an angle of 30^0 to the HP and the top view making an angle of 50^0 to the VP. **10**

B) FIG. 8B shows two orthographic views. Draw an isometric view. **10**

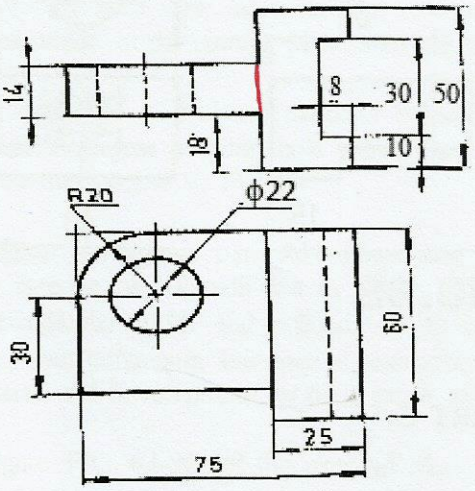

FIG. 8B