Roll No. ..... Total Pages : 03

BT-1/D-22 41041

ENGINEERING GRAPHICS AND DESIGN

ES-109-A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Assume any missing data.

Unit I

1. Draw a hypocycloid of a circle of diameter 50 mm, which rolls inside a circle of diameter 180 mm for one revolution. Also, draw a tangent and a normal to the hypocycloid at a point 50 mm from the centre of the directing circle. **15**

2. If 1 cm long line on a map represents a real length of 4 m. Calculate the R.F. and draw a vernier scale long enough to measure up to 50 m. Show a distance of 44.5 m on it. **15**

Unit II

3. (a) Draw the projections of the following points on a common reference line keeping the distance between their projectors 30 mm apart.

(i) Point P is 35 mm below the H.P. and in the V.P.

(ii) Point Q is 40 mm in front of the V.P. and 25 mm below the H.P.

(iii) Point R is 45 mm above the H.P. and 20 mm behind the V.P.

(iv) Point S is 30 mm below the H.P. and 45 mm behind the V.P.

(v) Point T is both in H.P. and V.P. **10**

(b) The front view of a line PQ parallel to the V.P. and inclined 60° to the H.P. is 50 mm. One end of the line is 20 mm in front of the V.P. and 25 mm above the H.P. Draw its projections and determine true length of the line. **5**

4. A pentagonal prism of base side 30 mm and axis 70 mm has a corners on the H.P. and the axis is inclined at 45° to the H.P. Draw its projection when the plane containing the resting corner and the axis is parallel to the V.P. **15**

Unit III

5. A triangular prism, base side 50 mm and axis 50 mm is lying on one of its rectangular faces on the H.P. with its axis perpendicular to the V.P. It is cut by a section plane parallel to and 20 mm above H.P. Draw its front view and sectional top view. **15**

6. A cylinder of base diameter 50 mm and axis 70 mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to the V.P., inclined at 45° to the H.P., passing through the top of a generator and cuts all the other generators. Draw the development of its lateral surface. **15**

Unit IV

7. Draw the isometric view of a sphere of diameter 60 mm truncated by a horizontal plane at a height of 20 mm from the centre plane. **15**

8. Pictorial view of an object is shown in Figure as given below. Using first angle projection, draw its (a) front view, (b) top view and (c) right-hand side view. **15**