Roll No. ..... Total Pages : 3

BT–1/D-23 **41041**

ENGINEERING GRAPHICS & DESIGN

Paper–ES–109A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks. Assume any missing data.

UNIT–I

1. (a) Point A is 20 mm above HP and in the 1st quadrant. Its shortest distances from the XY line is 40 mm. Draw the projections determine its distance from VP. 7

   (b) Draw an involute of a circle of 40 mm diameter. Also, draw a normal and a tangent to it at a point 100 mm from the centre of the circle. 8

2. Show by means of drawing that when the diameter of the directing circle is twice that of the generating circle, the hypocycloid is a straight line. Take the diameter of the generating circle is equal to 50 mm. 15

UNIT–II

3. (a) A straight line PQ has its end point P 10 mm above HP and 15 mm in-front of the VP. The line is 50 mm.

long and its front and top views are inclined at an angle of 60° and 45° respectively. Draw the projections of the line PQ and find its inclinations with the HP and VP. 9

(b) A regular pentagon of 25 mm side has one side on the ground. Its plane is inclined at 45° to the HP and perpendicular to then VP. Draw its projections. 6

4. A cube of 30 mm sides rests with one of its edges on HP such that one of the square faces containing that edge is inclined at 30° to HP and the edge on which it rests being inclined to 60° to VP. Draw its projections. 15

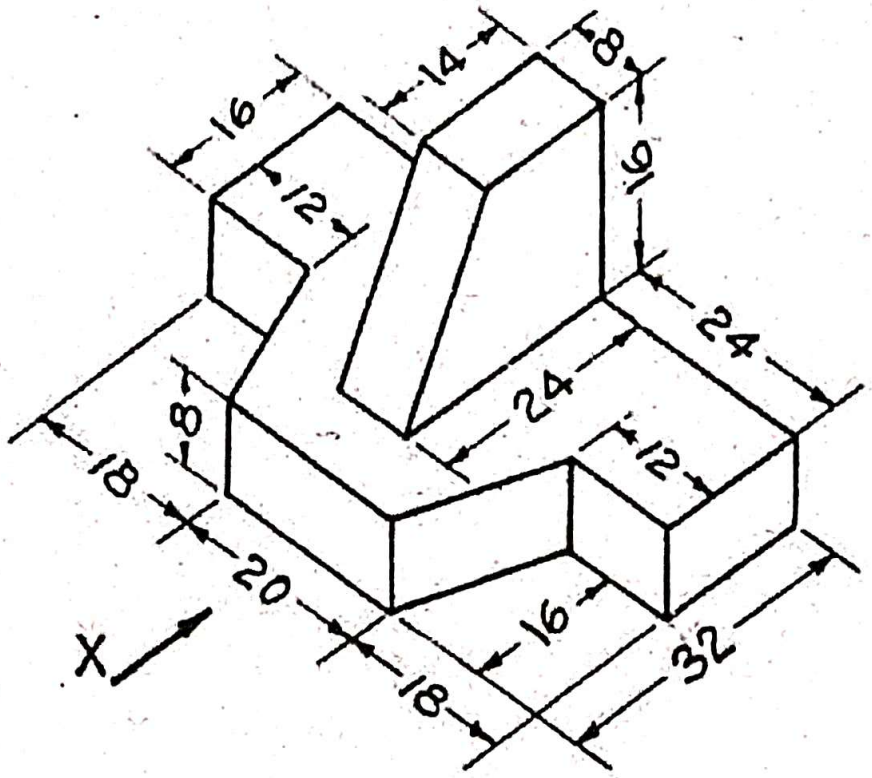
UNIT–III

5. A cone of base 70 mm diameter and axis 90 mm long is resting on its base on HP. It is cut by a section plane perpendicular to the VP and parallel to and 15 mm away from one of its end generators. Draw the sectional top view, front view and sectional side view. Also draw the true shape of the section. 15

6. Draw the development of the lateral surface of the lower portion of a cylinder of diameter 50 mm and axis 70 mm. The solid is cut by a section plane inclined at 40° to H.P. and perpendicular to V.P. and passing through the midpoint of the axis. 15

UNIT–IV

7. Draw the front view, side view from the right, and top view of the block as shown in figure. (All dimensions are in mm). 15



8. A square pyramid of side 30 mm, axis length 50 mm is centrally place over the top of a cube of side length 50 mm. Draw the isometric projections of the solids. 15