Code No: 182AV **R22**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech I Year II Semester Examinations, September - 2023

COMPUTER AIDED ENGINEERING GRAPHICS

(Common to CE, ME, ECE, EIE, AE, BT, MIE, PCE)

Time: 3 Hours **Max. Marks: 60**

Note: This question paper contains two parts A and B.
i) **Part- A** for 10 marks, ii) **Part - B** for 50 marks.

- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of **ten questions** (numbered from 2 to 11) **carrying 10 marks each**. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

PART- A

(10 Marks)

1.a)	Explain the principle of diagonal scale.	[1]
b)	Differentiate between Epicycloid and Hypocycloid.	[1]
c)	A point C is 40 mm below HP and 30 mm behind V.P. draw its projections.	[1]
d)	If the top view of a line lies in the reference line, state all the possible positions of the line.	[1]
e)	Define an auxiliary inclined plane, auxiliary vertical plane and a profile plane	[1]
f)	The surface of a hexagonal plane is perpendicular to both H.P. and V.P. Which orthographic view will show the true shape?	[1]
g)	Name the method used for drawing the development of pyramid and cone.	[1]
h)	What precaution should be taken while drawing the development of pyramid?	[1]
i)	How would you construct an isometric scale?	[1]
j)	What are the advantages of drawing isometric views?	[1]

PART-B

(50 Marks)

2.a)	Construct a plan scale to be used with a map; the scale of which is 1 cm = 500 m. The maximum length to be read is 5 km. Mark on the scale a distance of 3.85 km.	
b)	Construct a diagonal scale of 1:27 showing yards, feet and inches and long enough to measure up to 6 yards. Find R.F. and mark a distance of 5 yards 3 feet 9 inches.	[5+5]

OR

3.a)	Draw an epicycloid having a generating circle of diameter 50 mm and a directing curve of radius 100 mm. Also draw a normal and a tangent at any point M on the curve.	
b)	Construct a parabola when the distance between its focus and directrix is 50 mm. also draw a tangent and a normal at a point distance 65 mm from the directrix.	[5+5]
4.a)	Line AB of 70 mm long, has its end A at 10 mm above H.P and 15 mm in front of V.P. Its front view and top view measure 50 mm and 60 mm respectively. Draw the projections of the line and determine its inclinations with H.P. and V.P.	
b)	A 50 mm long line is perpendicular to the V.P. and 40 mm above the H.P. An end of the line is 10 mm in front of the V.P. draw its projections and the traces.	[5+5]

OR

5.a) Draw the projections of a circle of 40 mm diameter, resting on H.P. on a point on the circumference. Its plane is inclined at 30° to the H.P. and perpendicular to the V.P. Its centre is 35 mm in front of the V.P.

b) Draw the projections of a regular hexagon of 25 mm side having one of its sides in the H.P. and inclined at 60^0 to the V.P. and its surface making an angle of 45^0 with the H.P. [5+5]

6. A pentagonal prism of 35 mm base side and 70 mm long axis has its axis inclined at 30^0 to the V.P. An edge of its base is in the V.P. and inclined at 45º to the H.P. Draw its projections. [10]

OR

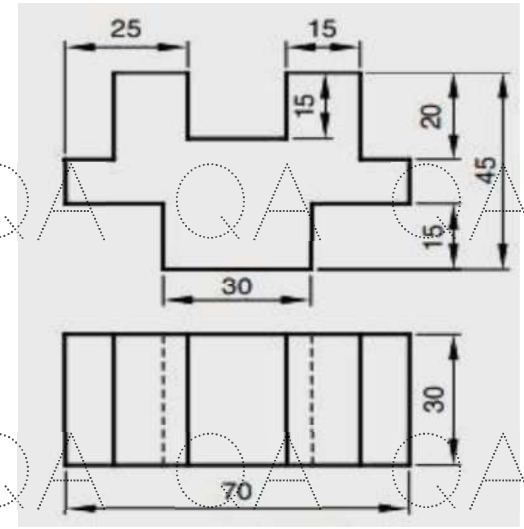
7. A pentagonal prism of 25 mm base and 60 mm height has an edge of its base on the H.P. and the axis parallel to the V.P. and inclined at 60^0 to the H.P. A section plane having its H.T. perpendicular to XY and the V.T. inclined at 60^0 to XY and passing through the highest corner cuts the prism. Draw the sectional top view and true shape of the section. [10]

8. A square hole of 25 mm side is cut in a cylindrical drum of 50 mm diameter and 70 mm height. The faces of the hole are inclined at 45º to the H.P. and axis intersects with that of the drum at right angles. Draw the development of its lateral surface. [10]

OR

9. Draw the development of the lateral surface of the frustum of the square pyramid of side of base 30 mm and axis 40 mm, resting on HP with one of the base edges parallel to V.P. It is cut by a horizontal cutting plane at a height of 20 mm. [10]

10. Draw the isometric view from the figure 1 using two orthographic views of an object shown below. [10]

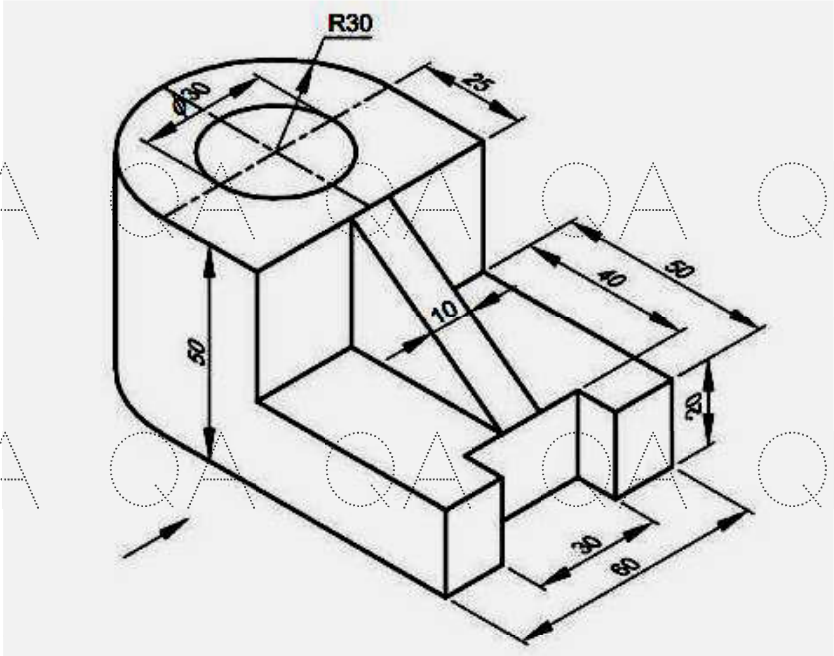


All dimensions are in mm

Figure 1

OR

11. Pictorial view of an object is shown in Figure 2. Using first-angle projection, draw its (a) front view in the direction of arrow, (b) top view and (c) right-hand side view. [10]



All dimensions are in mm

Figure 2

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