

**R18**

Code No: 151AD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech I Year I Semester Examinations, December – 2019/January - 2020

ENGINEERING GRAPHICS

(Common to CE, ME, EIE, MCT, MMT, AE, MIE, PTM)

Time: 3 hours

Max. Marks: 75

Answer all five questions

All questions carry equal marks

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- 1.a) Draw a hyperbola when the eccentricity is  $\frac{3}{2}$  and the distance between focus and directrix is 55mm. Also draw tangent and normal to the curve at a point 40mm from focus.
- b) An area of 144 sq.cm on a map represents an area of 36 sq.km on the field. Find the RF of the scale, and draw a diagonal scale to show kilometres, hectametres and decametres and to measure upto 10km. Mark a length of 7km, 5hm and 6dm on the scale. [8+7]

OR

- 2.a) A circle of diameter 50 mm is rolling on another circle of diameter 50 mm. Draw the path traced out by a point on the rolling circle for half revolution of the rolling circle.
- b) The distance between two stations is 100 km and on a road map it is shown by 30 cm. Draw a diagonal scale and indicate distances of 46.8 km and 32.4 km on it. [8+7]

- 3.a) A line PQ, inclined at  $30^\circ$  to the H.P., has the end P at 20 mm above the H.P. and 10 mm in front of the V.P. The front view of the line is 70 mm long and inclined at  $60^\circ$  to the reference line. Draw the projections of the line and determine its true length and inclinations with the principal planes.

- b) A circular lamina with a 60 mm diameter has its centre 40 mm above the H.P. and 30 mm in front of the V.P. The surface of the lamina is perpendicular to the H.P. and inclined at  $45^\circ$  to the V.P. Draw its projections. [7+8]

OR

- 4.a) A 120 mm long straight line PQR, is inclined at  $30^\circ$  to the H.P. and  $45^\circ$  to the V.P. The point Q divides the line in the ratio of 1:3 and is situated 40 mm above the H.P. and 60 mm in front of the V.P. Draw its projections.

- b) A rectangular plate of 60 mm and 40 mm sides rests on the H.P. on the shortest edge, with its surface perpendicular to the V.P., such that the centre of the plate lies 20 mm above the H.P. and 30 mm in front of the V.P. Draw the projections of the plate and determine angle made by it with the H.P. [7+8]

5. A cylinder, with a 50 mm base diameter and a 70 mm long axis, is resting on its base on H.P. It is cut by a section plane perpendicular to V.P., and cuts the axis at a point distant 20 mm from the top end of the axis and makes an angle of  $45^\circ$  with the reference line. Draw its front view, sectional top view and another top view on an A.I.P. parallel to the section plane. [15]

OR

6. A pentagonal pyramid, having base with a 40 mm side and a 70 mm long axis, is kept on the H.P. on its base with a side of the base perpendicular to the V.P. It is cut by an A.I.P. such that true shape of the section is a trapezium having one of the parallel sides 15 mm long and other parallel side being largest as possible. Draw its front view, sectional top view and true shape of the section. [15]

7. A vertical cylinder of 70 mm diameter is penetrated by another cylinder of 45 mm diameter, the axis of which is parallel to both *HP* and the *VP*. The two axes are 9 mm apart. Draw projections showing curves of intersection. [15]

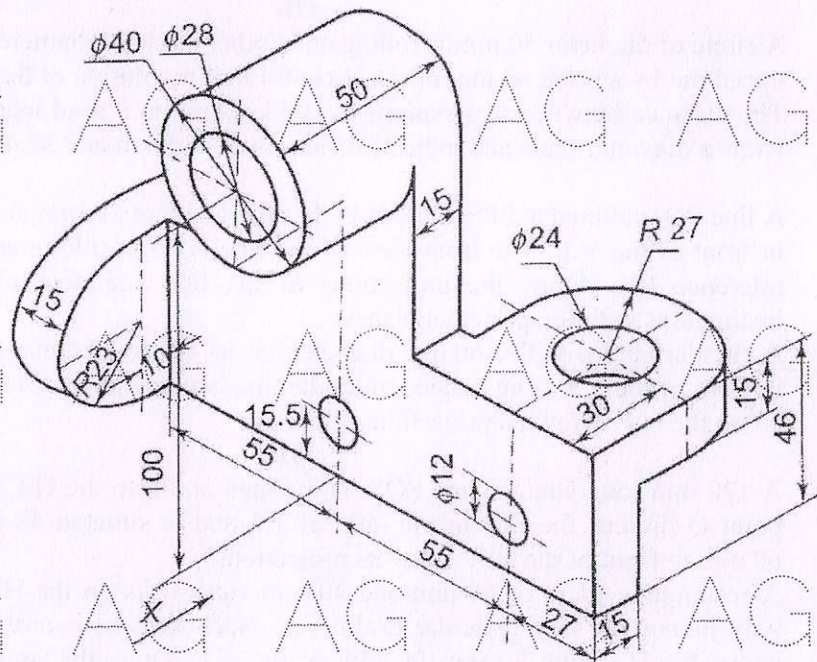
OR

8. A pentagonal prism of base 30 mm side and 60 mm height is resting on the base in *HP* such that one of the rectangular face is parallel to the *VP*. It is cut by a plane perpendicular to *VP* and 60 degrees inclined to *HP* and bisecting the axis of the solid. Draw development of lateral surface of the bottom part of the solid. [15]

9. A frustum of a cone 30 mm as top diameter, 50 mm as bottom diameter and 60 mm long is placed vertically on a square slab of side 70 mm and 30 mm thick, such that both the solids have the common axis. Draw the isometric projection of the combination of solids. [15]

OR

10. Draw the elevation, top view and side view of the object shown in figure. All dimensions are in mm. [15]



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