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**Question Paper Code : 41179**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

First Semester

Mechanical Engineering

GE 6152 – ENGINEERING GRAPHICS

(Common to Mechanical Engineering (Sandwich) Aeronautical Engineering/  
Agriculture Engineering/Automobile Engineering/Biomedical Engineering/  
Civil Engineering/Computer Science and Engineering/Electrical and Electronics  
Engineering/Electronics and Communication Engineering/Electronics and  
Instrumentation Engineering/Environmental Engineering/Geoinformatics  
Engineering/Industrial Engineering/ Industrial Engineering and Management/  
Instrumentation and Control Engineering/Manufacturing Engineering/Marine  
Engineering/Materials Science and Engineering/Mechanical and Automation  
Engineering/Mechatronics Engineering/Medical Electronics/Metallurgical  
Engineering/Petrochemical Engineering/Production Engineering/Robotics  
and Automation Engineering/B.E./B.Tech. (Common to all branches except  
Marine Engg.) Bio Technology/B.Tech. Chemical Engineering/Chemical and  
Electrochemical Engineering/Fashion Technology/Food Technology/Handloom  
and Textile Technology/Industrial Bio Technology/B.Tech. Information Technology/  
Leather Technology/Petrochemical Technology /Petroleum Engineering/  
Pharmaceutical Technology/B.Tech. Plastic Technology/Polymer Technology/  
Rubber and Plastics Technology/Textile Chemistry/Textile Technology/Textile  
Technology (Fashion Technology)/Textile Technology (Textile Chemistry)  
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

(5×20=100 Marks)

1. a) A fixed point is 75 mm from a fixed straight line. Draw the locus of a point 'P' moving such a way that its distance from the fixed point is twice its distance from the fixed straight line. Name the curve. Draw a tangent and normal at any point on the curve.

(OR)

- b) Draw by free hand the top view, front view and right side view of the object shown in figure 1.

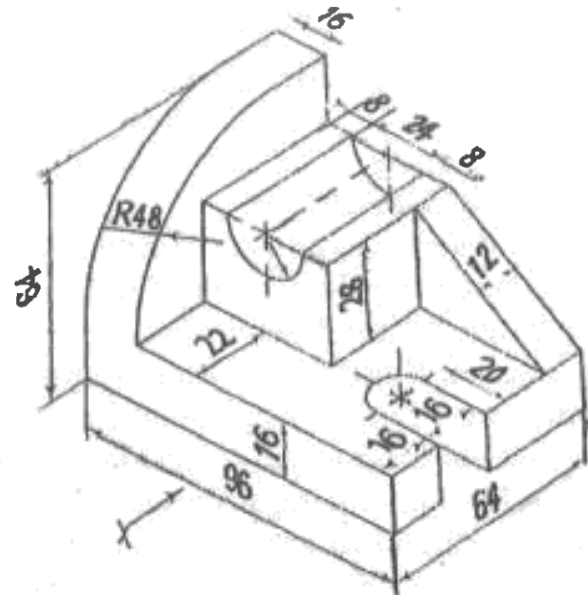


figure 1

2. a) A line AB is in the first quadrant. The top view of the line measures 60 mm and inclined to the reference line by  $60^\circ$ . The end point A is 15 mm above the HP and 30 mm in front of the VP. Draw the projection of the line when it is inclined at  $45^\circ$  to the HP. Find the true length and inclination of the line with the VP and locate the traces.

(OR)

- b) A rectangular lamina of sides 75 mm  $\times$  40 mm is resting on the VP on one of its longer sides. The surface of the lamina is inclined  $45^\circ$  to the VP and the side resting on the VP is inclined  $45^\circ$  to the HP. Draw the projections of the lamina.

3. a) A pentagonal prism of base side 30 mm and axis length 60 mm is resting on the HP on one of its rectangular faces, with the axis inclined  $30^\circ$  to the VP. Draw the projections of the prism.

(OR)

- b) Draw the projections of a cube having side length 30 mm resting on the HP on one of its corners, with the solid diagonal through the resting corner is perpendicular to the HP and parallel to the VP.

4. a) A cylinder of base diameter 50 mm and height 60 mm is resting on the HP on its base. It is cut by a plane perpendicular to the VP and inclined to the HP, such that the true shape of the cut section is an ellipse with major axis 60 mm. The cutting plane also bisects the axis of the cylinder. Draw the sectional top view, sectional front view and true shape of the section. Find the inclination of the cutting plane with respect to the HP.

(OR)

- b) A cone of base 60 mm and height 80 mm is resting on its base on the HP. A cutting plane perpendicular to both the HP and VP cuts the cone a distance 15 mm to the left of the axis. Another cutting plane parallel to the HP and perpendicular to the VP cuts the cone 20 mm from the apex of the cone. Draw the development of remaining portion of the cone.

5. a) Draw the isometric view of a frustum of a hexagonal pyramid with side of base 40 mm and side of top 30 mm. The height of the frustum is 50 mm.

(OR)

- b) Draw the perspective view of a square pyramid with base side 30 mm and axis height 45 mm. The nearest edge of the base is parallel to and 20 mm behind the picture plane. The station point is situated at a distance of 70 mm in front of the picture plane and 40 mm to the right of the axis of the pyramid and 60 mm above the ground.