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**Question Paper Code : 50650**

**B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017**

## First Semester

## Mechanical Engineering

GE 6152 – ENGINEERING GRAPHICS

(Regulations 2013)

(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 Engineering, Metallurgical Engineering, Petrochemical Engineering, Production Engineering, Robotics and Automation Engineering, Biotechnology, Chemical Engineering, Chemical and Electrochemical Engineering, Fashion Technology, Food Technology, Handloom and Textile Technology, Industrial Bio Technology, Information Technology, Leather Technology, Petrochemical Technology, Petroleum Engineering, Pharmaceutical Technology, Plastic Technology, Polymer Technology, Rubber and Plastics Technology, Textile Chemistry, Textile Technology, Textile Technology (Fashion Technology), Textile Technology (Textile Chemistry))

Time : Three Hours

**Maximum : 100 Marks**

Drawings should be neat and legible.

Standards should be followed for dimensioning and printing.

Missing dimensions may be suitably assumed.

Answer ALL questions

**(5×20=100 Marks)**

1. a) Draw the following views of the component shown in Fig. 1.a) by free hand sketching

- i) Front view                      ii) Top view and                      iii) Right side view

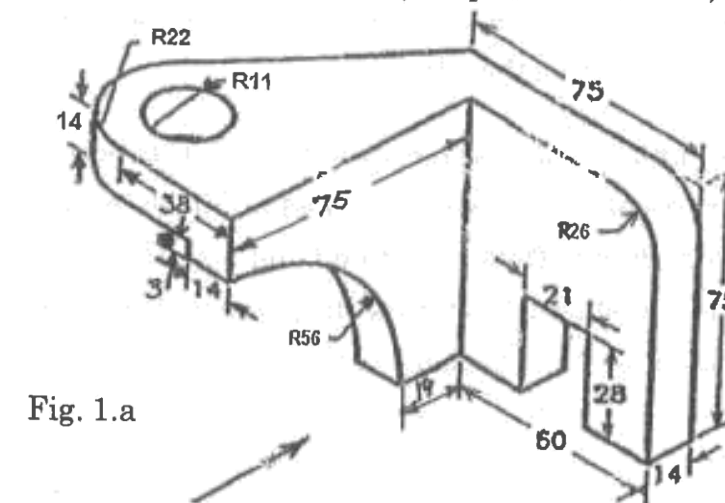


Fig. 1.a

(OR)



- b) An inelastic string of 150 mm length has its one end attached to the bottom most point of the circumference of a circular disc of 40 mm diameter. Draw the curve traced by the other end of the string when it is completely wound around the disc keeping the string always tight. Name the curve obtained. Draw the tangent and normal to the curve at a point 100 mm from the centre of the disc.
2. a) The distance between the end projectors of a line PQ is 70 mm and the projectors through the traces are 110 mm apart. The end P of the line is 10 mm above the HP. If the top view and the front view of the line make  $30^\circ$  and  $60^\circ$  respectively with the reference line, draw the projections of the line. Determine the true length of the line and the angle of inclination with HP and VP. Locate the traces too.
- (OR)
- b) A regular pentagon with 25 mm side is resting on one of its sides on the HP with that side parallel to and 25 mm in front of the VP. It is tilted about that side such that its highest corner rests on the VP. Draw the projections of the pentagon.
3. a) A cone of 30 mm diameter and height 70 mm rests on the ground on one of its base circle points such that the apex is 20 mm from the VP. The nearest point of the base is 50 mm from the VP and the base is perpendicular to the HP. Draw the projections.
- (OR)
- b) A hexagonal pyramid having a base of 30 mm side and axis 80 mm long is freely suspended from one of the corners of the base. Draw the projections when the axis is parallel to and 45 mm from the VP.
4. a) A cylinder 55 mm diameter and 65 mm long has its axis parallel to both the HP and the VP. It is cut by a vertical section plane inclined at  $30^\circ$  to the VP, such that the axis is cut at a point 30 mm from its left end and both the ends of the cylinder are partly cut. The lowest cutting point of the plane is at the right end. Draw its sectional front view and the true shape of the section.

(OR)

- b) A cylindrical drum of 60 mm diameter and height 100 mm is resting on its base on the HP. A square hole with 50 mm side is cut through the drum such that one of the faces of the square hole makes  $30^\circ$  with the HP. The axis of the square hole is perpendicular to the VP and is 12 mm away from the axis of the cylinder towards the right. Draw the development of the retained cylinder.
5. a) A square pyramid having base of side 40 mm side and height 60 mm rests on the GP with an edge of the base parallel to and 15 mm behind the picture plane. The station point is 90 mm above the GP and 75 mm in front of the picture plane and lies in a central plane which is 40 mm towards the right of the axis of the pyramid. Draw its perspective view.
- (OR)
- b) A pentagonal pyramid of base edge 30 mm and height 65 mm rests on the HP on its base such that an edge of the base is parallel to VP and nearer to it. It is cut by a plane perpendicular to VP and inclined at  $30^\circ$  to the HP. It intersects the axis of the pyramid at a height of 35 mm from the base. Draw the isometric view of the truncated pyramid.