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**Question Paper Code : 80504**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

First Semester

Civil Engineering

GE 6152 — ENGINEERING GRAPHICS

(Common to all branches)

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

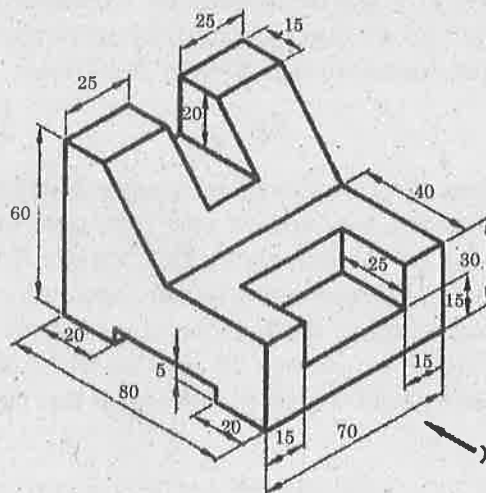
Answer ALL questions.

(5 × 20 = 100)

1. (a) An inelastic string of 150 mm long has its one end attached to the circumference of a circular disc of 40 mm diameter. Draw the curve traced out 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 distant 100 mm from the centre of the disc.

Or

- (b) Draw the elevation, plan and left side view of the solid shown below.



(All dimensions are in mm)

2. (a) A room is  $4.8 \text{ m} \times 4.2 \text{ m} \times 3.6 \text{ m}$  high. Determine graphically, the distance between a top corner and the bottom corner diagonally opposite to it.

Or

- (b) An equilateral triangle  $ABC$  of side  $70 \text{ mm}$  is so placed that the side  $AB$  is parallel to  $HP$  and inclined at  $40^\circ$  to  $VP$ . The difference in height between  $C$  and  $A$  is  $30 \text{ mm}$ . Draw the projections of the triangle.
3. (a) A square prism of  $40 \text{ mm}$  and base side  $60 \text{ mm}$  long axis is kept on the  $VP$  on a corner of its base such that the longer edge containing that corner (on the  $HP$ ) makes an angle of  $30^\circ$  to the  $VP$ . Draw the projection.

Or

- (b) A cylindrical disc of  $60 \text{ mm}$  diameter and  $20 \text{ mm}$  thickness has a central coaxial square hole with  $40 \text{ mm}$  long diagonals. Draw the projections of the disc when the flat faces of the disc are vertical and inclined at  $45^\circ$  to the  $VP$  and the faces of the hole are equally inclined to the  $HP$ .
4. (a) Draw the development of lateral surface of a hexagonal pyramid with a  $40 \text{ mm}$  base side and a  $60 \text{ mm}$  long axis, which is resting on its base in the  $HP$ , such that an edge of the base is perpendicular to  $V.P$ , when an auxiliary inclined plane whose  $V.T.$  makes an angle  $60^\circ$  with  $H.P.$ , bisects the axis.

Or

- (b) A cone, having a  $60 \text{ mm}$  base diameter and a  $70 \text{ mm}$  long axis, is resting on its base on the ground. It is cut by a plane such that the true shape of the section is a rectangular hyperbola with a  $40 \text{ mm}$  base and seen in the front view. Draw the sectional front view and find the distance of the section plane from the axis of the cone.
5. (a) A square pyramid rests centrally over a cylindrical block. Draw the isometric projection of the arrangement. Consider the pyramid has a base with  $25 \text{ mm}$  side and  $40 \text{ mm}$  long axis whereas the cylindrical block has a base with  $50 \text{ mm}$  diameter and  $20 \text{ mm}$  thickness.

Or

- (b) A cube of  $25 \text{ mm}$  side is placed vertically with one of its edges on the picture plane and the top square end face touching an auxiliary ground plane at a height of  $45 \text{ mm}$  above the horizon plane. The vertical edge formed by the two adjacent rectangular faces which are inclined at  $45^\circ$  to the picture plane, touches the picture plane. Draw the perspective view of the cube if the station point is  $70 \text{ mm}$  in front of the picture plane and lies in the central plane which is  $30 \text{ mm}$  to the right side of the centre of the cube.