

I B.Tech Year(RR) Supplementary Examinations, May/June 2010
RR100107

(Common to Civil Engineering and Mechanical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Construct a vernier scale to read distances correct to a decameter on a map in which the actual distances are reduced in the ratio of 1:40000. The scale should be long enough to measure 6 kilometers. Mark on the scale the lengths of 3.34 km and 0.57 km. [16M]
2. Construct an ellipse, when the distance of the focus from the directrix is equal to 60 mm and eccentricity $\frac{2}{3}$. Also draw a normal and tangent to the curve at a point 35 mm from the focus. [16M]
3. Three lines OA, OB and OC are respectively 25 mm, 45 mm 65 mm long, each making 120 degrees angles with the other two and the shortest line being vertical. The figure is the top view of the three rods OA, OB and OC whose ends A, B and C are on the ground, while O is 100 mm above it. Draw the front view and determine the length of each rod and its inclination with the ground. [16M]
4. Three spheres each of diameter 45mm rest on the HP touching each other. The line of centres of two of them is inclined at 30° to the VP. Another sphere of diameter 55mm is kept over the three spheres in a pyramidal form touching the other spheres. Draw the projections of the assembly of spheres. [16M]
5. A hexagonal prism of side of base 30 mm and axis 65 mm stands on one of its ends in HP with two of rectangular faces parallel to V.P. A circular hole of diameter 40 mm is drilled completely through the prism such that the axis of the hole is perpendicular to V.P and bisects the axis of the prism. Draw the development of the lateral surface of the prism showing the shape of the holes formed on it. [16]
6. Draw the isometric projection of a Frustum of hexagonal pyramid, side of base 30 mm the side of top face 15mm of height 50 mm. [16]
7. A square is resting on ground plane on one of its corners and is some distance behind VP. Its plane is perpendicular to HP and inclined at 30° to the VP and the sides containing the corner are equally inclined to the HP. Determine the line of heights for points lying in its top view and then draw its perspective view from the given position of the station point. [16M]
8. A steel rack of size 1 m \times 0.4 m \times 1.5 m has 3 shelves equally spaced. If stands on the ground plane such that one of its vertical edges touches the PP and a longer horizontal edge is incline at 30° to the PP. The station point is 1.25 m in front of PP, 2 m above the ground plane and lies in a central plane, which is at 0.25 m to the right of the edge, touching the picture plane. Draw the perspective view of the rack which its front portion is open. [16M]
