

## ***B. Tech Degree I & II Semester Examination in Marine Engineering June 2010***

### **MRE 106 ENGINEERING GRAPHICS**

Time : 3 Hours

Maximum Marks : 100

- I. a. On a map, the distance between two points is 14 cm. The real distance between them is 20 km. Draw a diagonal scale of this map to read hectameters and kilometers and to measure upto 25km. Show a distance of 18.4 km on this scale. (10)
- b. The actual length of 500m is represented by a line of 15cm on a drawing. Construct a vernier scale to read upto 600m. Mark on this scale a length of 549m. (10)
- OR**
- II. a. The major axis of an ellipse is 100mm long and the foci are at a distance of 15mm from its ends. Draw the ellipse by concentric circle method. Also draw a tangent and normal at any convenient point in the curve. (10)
- b. A circle of 40mm diameter rolls along a straight line without slipping. Draw the curve traced out by a point 'P' on the circumference, for one complete revolution of the circle. Name the curve. Also draw the tangent and normal at a point on it 40mm from the line. (10)
- III. The front view of a line PQ makes an angle  $30^\circ$  with XY. The HT of the line is 45mm behind the VP. While its VT is 30mm above the HP. The end P of the line is 10mm below HP and end Q is in the first quadrant. The line is 150mm long. Draw the projections of the line and determine the true length of the portion of the line which is in the second quadrant. Also find the angle of the line with HP and VP. (20)
- OR**
- IV. A  $60^\circ$  set – square of 125mm longest side is so kept that the longest side is in the HP, making an angle of  $30^\circ$  with VP and set square itself inclined at  $45^\circ$  to the HP. Draw the projections of the plane figure. (20)
- V. A square pyramid, base 40mm side and axis 75mm long is placed on the ground on one of its slant edges, so that the vertical plane passing through that edge and the axis makes an angle of  $30^\circ$  with the VP. Draw its three views. (20)
- OR**
- VI. A cone 75mm diameter and axis 100mm long has its base on the ground. A section plane parallel to one of the end generators and perpendicular to the VP, cuts the cone intersecting the axis at a point 75mm from the base. Draw the sectional top view and project another top view on a plane parallel to the section plane, showing the shape of the section clearly. (20)
- VII. A cone of 70mm diameter base and 90mm height stands on its base on the ground. A circular hole of 25mm diameter is cut through the cone. The axis of the hole is parallel to VP and intersect the axis of the cone at a distance 30mm above the base. Draw the development of the lateral sides of the cone. (20)
- OR**
- VIII. A cone, 90mm diameter of base, axis 110mm long, stands on the ground and is completely penetrated by a cylinder, 50mm diameter and 110mm long. The axis of the cylinder is horizontal, parallel to VP and passes through the axis of the cone, 75mm from the apex. Draw the projections of both curves of intersection. (20)
- IX. Draw the isometric projection of a hemisphere of radius 30mm resting on the top of a cube of 40mm side, in such a way that the curved surface of the hemisphere is touching the top surface of the cube. The axes of the objects are in same line. (20)
- OR**
- X. A rectangular block, 3cm x 2cm x 1.5cm, is lying on the ground plane on one of its largest faces. A vertical edge is in the picture plane and the longer face containing that edge makes an angle of  $30^\circ$  with the picture plane. (20)