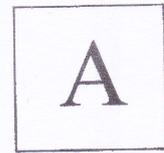


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***B.Tech. Degree I & II Semester Examination in
Marine Engineering May 2017***

**MRE 1106 ENGINEERING GRAPHICS
(2013 Scheme)**

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

- I. (a) A roller of diameter 60 mm rolls on a straight line without slipping. Trace the locus of the point P on the circumference of the roller for one and half revolution. Also draw a tangent and a normal to the curve when the point P passes through 270° from its initial position. (10)
- (b) The distance between two places is 240 km and this distance on a map measures 12 cm. Draw a diagonal scale to indicate 273 km and 128 km. (10)
- OR**
- II. (a) A point moves in such a way that distance from a fixed straight line is always 0.5 times from a fixed point 50 mm away from the fixed line. Draw the locus of the point and name the curve. (10)
- (b) Draw a logarithmic spiral for one convolution if the ratio of the lengths of the two consecutive radii is 10/9 with an included angle of 30°. Take the length of the shortest radius vector as 36 mm. Also draw a tangent at any point P, 80 mm from the pole. (10)
- III. (a) A straight line 65 mm long has one end 15 mm in front of VP and 40 mm above HP while the other end is 30 mm in front of VP and 20 mm above HP. Draw the plan and elevation of the line. What is the true inclination of the line with HP? What is the length of the plan? (10)
- (b) The mid point 'm' of a line AB 75 mm long is 25 mm above HP and 40 mm in front of VP. It is inclined at 30° to HP and 50° to VP. Draw its projections. (10)
- OR**
- IV. (a) A pentagonal lamina edge 30 mm is resting on a corner on HP. An edge which is parallel to HP makes 40° with VP and the plane of lamina is inclined at 30° with HP. Draw the projections. (10)
- (b) A rectangular plate ABCD, 50 mm × 30 mm is resting on its shorter edge with the plane of the surface inclined at 28° with HP and the shorter edge on which the lamina rests, inclined at 30° with VP. Draw the projections, if the highest edge is near to VP. (10)
- V. A frustum of a pyramid with bottom base edge 30 mm, top edge 15 mm and height 35 mm is resting on a corner with a slanting edge containing the above corner inclined at 25° with HP and the base inclined at 50° with VP. Draw the projections. (20)
- OR**
- VI. A pentagonal pyramid has its base on the ground and the edge of the base nearer is parallel to VP. A vertical section plane, inclined at 45° to VP, cuts the pyramid at a distance of 8 mm from the axis. Draw the top view, sectional front view and the auxiliary front view on an AVP parallel to the section plane. The base of the pyramid has 28 mm side and axis 56 mm long. (20)

(P.T.O.)

- VII. A hexagonal prism, base edge 30 mm and height 60 mm is resting on its base on HP with one base edge parallel to VP. A square hole, side 30 mm is drilled through this prism in such a way that the axis of the hole is perpendicular to VP and intersect the axis of the solid. If the sides of square hole are equally inclined to HP, develop the lateral surface of the prism. (20)

OR

- VIII. A square prism base 45mm side and 100 mm long is resting on its square base on HP with the two adjacent vertical faces equally inclined to VP. It is penetrated by triangular prism 45 mm side and 90 mm long such a way that their axes intersect each other at right angles at their mid points. If the two rectangular faces of the triangular prism are equally inclined to the horizontal plane, draw the projections of the solids showing the lines of intersection. (20)

- IX. A right circular cone of diameter 40 mm and height 60 mm rests on top of a square slab of side of base 45 mm and height 24 mm such that the axes of the solids are in the same vertical line. Draw the isometric view of the solids in position. (20)

OR

- X. A hexagonal pyramid of 20 mm base side and height 35 mm is resting on its base on ground with one of its base edges on PP. The station point is 40 mm in front of PP, 30 mm above the ground and central plane passing through a point 30 mm to right of the axis of the pyramid. Draw the perspective projection of the pyramid. (20)
