

--	--	--	--	--	--	--	--

***B.Tech. Degree I&II Semester Examination in  
Marine Engineering May 2019***

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

Time : 3 Hours

Maximum Marks : 100

(5 × 20 = 100)

- I. (a) Draw a backward reading Vernier Scale with  $LC = 1/20^{th}$  of a metre where 3 cm represents 10 m. The scale should be long enough to measure upto 60 m. Mark a distance of 35.35 m on the scale. (10)
- (b) The major and minor axes of an ellipse are 125 mm and 100 mm respectively. Draw the ellipse by concentric circle method and locate the foci. (10)
- OR**
- II. (a) Construct a diagonal scale of RF = 1/40, showing metres, decimetres and centimetres and to measure 6 m. Mark a distance of 4 m 5 dm 6 cm on this scale. (10)
- (b) A wheel of 1.6 m in diameter has six spokes connecting the rim and the hub. The wheel is rotating in the anti-clockwise direction at 80 rpm. A particle of dust starts from the centre and travels along the spoke with uniform velocity and reaches the rim after two seconds. Trace the path of the particle. (Select a scale 1:10) (10)
- III. (a) A line AB measuring 70 mm has its end A 15 mm in front of VP and 20 mm above HP and other end B is 60 mm in front VP and 50 mm above HP. Draw the projections of the line and find the inclinations of the line with both the reference planes. (10)
- (b) A regular pentagonal lamina ABCDE of 40 mm side has one edge on HP and inclined at  $50^\circ$  to VP. The surface of the lamina makes  $40^\circ$  to the HP. Draw the projections of the lamina. (10)
- OR**
- IV. (a) A straight line PQ has its mid-point M at a distance of 45 mm from both HP and VP. Its true length is 80 mm and the top view makes  $30^\circ$  with XY and the front view makes  $45^\circ$  with XY line. Draw the projections of the line and obtain the traces. (10)
- (b) A lamina ABCD in the form of a rhombus has its diagonal AC 60 mm and the other diagonal BD 30 mm. It stands on a corner A on HP such that its surface is inclined at  $60^\circ$  to the HP and the diagonal BD parallel to both the planes. Draw the projections of the lamina. (10)
- V. A pentagonal pyramid side of base 35 mm and height 70 mm rests on one of its corners of the base, such that its axis is inclined at  $60^\circ$  to the HP and  $45^\circ$  to the VP. Draw its projection. (20)
- OR**
- VI. A hexagonal prism, side of base 20 mm and axis 70 mm is resting on an edge of base on the HP, inclined at  $40^\circ$  to the VP. The axis is inclined at  $60^\circ$  to HP. Draw the projections of the solid. (20)

- VII. A pentagonal pyramid of side of base 40 mm and height 75 mm stands with its base on HP such that the edge nearer to the VP is parallel to VP. It is cut by a section plane inclined at  $30^\circ$  to the HP and perpendicular to VP bisecting the axis. Draw the development of the lateral surface of the lower portion of the solid. (20)

OR

- VIII. A vertical square prism of 50 mm side has its rectangular faces equally inclined to VP. It is fully penetrated by another horizontal square prism of base side 30 mm. The axis of the horizontal prism is parallel to VP and 6 mm in front of the axis of the vertical prism. The rectangular faces of the horizontal prism are equally inclined to VP. Draw the projections of the solids showing the lines of the intersection. Assume the length of both prisms to be 100 mm. (20)

- IX. On top of a rectangular slab  $75 \text{ mm} \times 50 \text{ mm} \times 20 \text{ mm}$ , rests a square pyramid of altitude 40 mm and side of base 25 mm. The axes of the solids are in same line. Draw the isometric view of the combination. (20)

OR

- X. A pentagonal prism of base side 25 mm and 60 mm long is lying behind the picture plane on one of the rectangular faces on ground plane with axis perpendicular to PP. One of the pentagonal faces is 12 mm behind the picture plane. The station point is 60 mm in front of PP, 55 mm above ground plane and lies in a central plane which is 40 mm to the left of centre of the prism. Draw the perspective view of the prism. (20)

\*\*\*