BT MRE-II(R/S)-06-24-3235 Reg. No. | | | | | | | | |

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# *B.Tech. Degree II Semester Regular/Supplementary Examination in Marine Engineering June 2024*

**19-208-0203 ENGINEERING GRAPHICS**

*(2019 Scheme)*

Time: 3 Hours Maximum Marks: 60

Course Outcome

On successful completion of the course, the students will be able to:

CO1: Prepare drawings as per Indian standards.
CO2: Produce orthographic projection of straight lines and planes.
CO3: Draw orthographic projection of solids.
CO4: Understand development of surface of different geometric shapes.
CO5: Construct isomeric scale, isomeric projections and views.

Bloom's Taxonomy Levels (BL): L1 – Remember, L2 – Understand, L3 – Apply, L4 –Analyze, L5 – Evaluate, L6 – Create

PI – Programme Indicators

(Answer *ALL* questions) (5 × 15 = 75)

| | | | Marks | BL | CO | PI |
|---|---|---|---|---|---|---|
| I. | (a) | Construct a diagonal scale to show metres, decimetres and long enough to measure upto 250 metres. RF of the scale is 1/2000. Mark a distance of 156.75 m. | 8 | L2 | 1 | 1.3.1 |
| | (b) | Construct a backward reading vernier to show decimetres, centimetres and millimetres and long enough to measure a length of 6 decimetre. RF of the scale is 1/3. Mark 3.69 decimetres and 2.57 decimetres on it. | 7 | L2 | 1 | 1.3.1 |
| | | **OR** | | | | |
| II. | (a) | Construct a cycloid, given the radius of the rolling circle as 25 mm, Also, draw a tangent and a normal at any point P on the curve. | 9 | L2 | 1 | 1.3.1 |
| | (b) | Trace a logarithmic spiral for one convolution such that the angle between two consecutive radii is 30°, the ratio of succeeding radii is 6:5 and the greatest radius being 120 mm. Draw a tangent and a normal at a distance of 90 mm from the pole. | 6 | L2 | 1 | 1.3.1 |
| III. | (a) | A line AB has its end A 15 mm above the HP and 20 mm infront of the VP. End B is 50 mm infront of the VP. The vertical trace is 10 mm above the HP. Draw the projections of the line if the distance between end projectors is 45 mm and find its TL, θ, Φ and HT. | 7 | L3 | 2 | 1.3.1 |
| | (b) | A rectangular plate ABCD, 50 mm × 30 mm is resting on its shorter edge with the plane of the surface inclined at 30° with HP and a longer edge inclined at 40° with VP. Draw the projections if the above shorter edge is nearer to VP and the nearest point is at a distance of 15 mm in front of VP. | 8 | L3 | 2 | 1.3.1 |
| | | **OR** | | | | |

**(P.T.O.)**

| | | | Marks | BL | CO | PI |
|---|---|---|---|---|---|---|
| IV. | (a) | A line AB has its end A 15 mm above the HP and end B is 60 mm in front of the VP. The front view of the line is inclined at 30° to the XY line. The horizontal trace of the line is 10 mm in front of the VP and its vertical trace is 15 mm below the HP. Draw its projection and determine its TL and true angle of inclination with HP and VP respectively. | 8 | L3 | 2 | 1.3.1 |
| | (b) | A pentagonal lamina, edge 30 mm is resting on a corner on HP. The edges containing the above corner are equally inclined to HP and one of them is inclined at 40° with VP. Draw the projections if the plane of the lamina is inclined at 30° with HP and the nearest point is at a distance of 20 mm away from VP. | 7 | L3 | 2 | 1.3.1 |
| V. | | A cube of solid diagonal length 80 mm rests with one of its corners on HP such that a solid diagonal is parallel to HP and perpendicular to VP. Draw its projections. | 15 | L3 | 3 | 1.3.1 |
| | | **OR** | | | | |
| VI. | | A hexagonal pyramid base 32 mm side and axis 70 mm long, rests upon its base on the ground with two of its base edges parallel to VP. It is cut by section planes, perpendicular to VP and parallel to HP for the left half and then inclined upwards to an angle of 45° for the right half. If the horizontal part of the cutting plane is located at 20 mm height from the base, draw the sectional top view of the pyramid. | 15 | L3 | 3 | 1.3.1 |
| VII. | | A cube of 50 mm side rests on the HP in such a way that the vertical faces are equally inclined to VP. A horizontal hole of 35 mm diameter is drilled through the geometrical centre of the cube and perpendicular to the VP. Draw the development of the lateral surfaces of the cube. | 15 | L3 | 4 | 1.3.1 |
| | | **OR** | | | | |
| VIII. | | A horizontal cylinder of 50 mm diameter penetrates a vertical cylinder of 80 mm diameter resting on HP. The two axes are coplanar. The axis of the horizontal cylinder is 60 mm above the HP. Draw the projection and show the curves of the intersection. | 15 | L3 | 4 | 1.3.1 |
| IX. | | Draw the isometric projection of a funnel consisting of cylinder and frustum of a cone. The diameter of cylinder is 20 mm and top diameter of frustum is 70 mm. The height of frustum and cylinder each equal to 40 mm. | 15 | L3 | 5 | 1.3.1 |
| | | **OR** | | | | |
| X. | | A cube of 25 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 mm above the horizon plane. The vertical edge formed by the two adjacent rectangular faces which are inclined at 45° to the picture plane, touches the picture plane. Draw the perspective view of the cube if the station point is 70 mm in front of the picture plane and lies in the central plane which is 30 mm to the right side of the centre of the cube. | 15 | L3 | 5 | 1.3.1 |

Blooms's Taxonomy Level
L2 – 20%, L3 – 80%.

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