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***B.Tech. Degree IV Semester Supplementary Examination in  
Marine Engineering June 2024***

**MRE 1406 SEAMANSHIP AND NAVIGATION**

*(2013 Scheme)*

(Answer **ALL** questions)

Time: 3 Hours

Maximum Marks: 100

(5 × 20 = 100)

- I. (a) Briefly describe the engine department on board a merchant vessel specifying the duties of all department engineers concerned and ratings. (10)
- (b) Explain the function of the following: (10)
- (i) Mooring winch
  - (ii) Anchor
  - (iii) Hatch cover
  - (iv) Bridge
  - (v) Forecastle
- OR**
- II. (a) Briefly describe with a neat sketch the horizontal sectors of visibility of all the navigational lights on a power driven vessel over 50 meters. (10)
- (b) Write short notes on the following: (10)
- (i) Flag of registry
  - (ii) Lookout duties
  - (iii) Morse Code
  - (iv) Hogging and Sagging
  - (v) Collision bulkhead
- III. (a) Draw a neat diagram showing the various parts of an anchor, explain the circumstances for a vessel requiring to anchor and state the precautions to be exercised while at anchor. (12)
- (b) Explain the use of the following: (8)
- (i) Devils claw
  - (ii) Spurling pipe
  - (iii) Hawse pipe
  - (iv) Bitter End
- OR**
- IV. (a) What factors are taken into consideration by the master while proceeding for anchoring at a place, discuss regarding the scope of anchor chain cable to be paid out based on the depth and type of seabed and holding power of different types of anchors. (12)
- (b) Write short notes on the uses of (8)
- (i) Figure of eight
  - (ii) Bowline
  - (iii) Double Sheet bend
  - (iv) Sheep shank
- V. Briefly explain the working principle of the following navigation equipment with suitable sketches (20)
- (i) AIS
  - (ii) Gyro compass
  - (iii) Voyage data recorder
  - (iv) Radar
  - (v) Echo sounder

- VI. (a) Explain the following terms: (10)
- (i) Position line
  - (ii) Standard time
  - (iii) Zone time
  - (iv) GMT
  - (v) Declination
- (b) How can you determine the position of our vessel with a lighthouse? What is the relevance of Polaris? (10)
- VII. (a) Name five lifeboat equipment. (5)
- (b) What are the marking found on a life boat? (5)
- (c) Explain the procedure for lowering an inflatable life raft. (10)
- OR**
- VIII. (a) Name the different types of life raft. (5)
- (b) What is a rescue boat and state its salient features? (5)
- (c) How are survivors in life raft protected from the severe weather conditions experienced at sea? (10)
- IX. (a) What is MARPOL 73/78? (5)
- (b) List the various annexes under MARPOL 73/78 and their date of enforcement. (5)
- (c) What are the emission control measures in place as per Annex 6 of Marpol 73/78 and what do you understand by SOx emission control area? (10)
- OR**
- X. (a) Explain the discharge criteria of oil originating from machinery spaces, inside as well as outside special areas as per Annex 1 of MARPOL 73/78. (10)
- (b) What entries are to be made in Oil Record Book as per Annex 1 of MARPOL 73/78? (10)

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