INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

December 2017 End Semester Examinations

Diploma in Nautical Science-First Semester

T 3105 NAVIGATION – II: BRIDGE EQUIPMENT, WATCHKEEPING & METEOROLOGY

Time: 3 hours **Maximum marks:** 70

Date: 08.12.2017 **Pass marks:** 35

Answer any four questions from Part A and any three questions from Part B.

All questions carry equal marks. (7 x 10 marks = 70 marks)

Neat sketches/Diagrams are to be drawn as appropriate.

Part – A : BRIDGE EQUIPMENT AND WATCH KEEPING

1. a) How does Echo Sounder help navigator? What is 'Pythagoras Error' on echo sounder?
   b) Explain the principle of Sextant. Which errors on sextant are correctable and how are they corrected?

2. a) Describe principle of Magnetic Compass. Explain advantages of Magnetic Compass over Gyro Compass.
   b) Explain the principal of Gyro compass. What are different methods by which, we can check the 'Gyro Error' at sea?

3. What are the 'Primary Duties' of Officer on Watch on Bridge? Explain how failure to plot the target ship, may lead to a lack of understanding of a developing situation or risk of collision.

4. a) Define the terms 1) Vessel not under command 2) Vessel constrained by her draught 3) Vessel engaged in fishing 4) Restricted Visibility 5) Sailing vessel
   b) As per rule 18, power-driven vessel under way shall keep out of which vessels? To which rules, this obligation does not apply? Quote part (d) of this rule, pertaining to vessel constrained by draught.

5. Illustrate the lights, shapes and restricted visibility sound signals of following vessels:

   a) Vessel on pilotage duty at anchor.
   b) Vessel constrained by her draught.

c) Vessel aground.
d) Vessel underway and making way through water.
e) Vessel engaged in fishing.

Part – B : METEOROLOGY

6. With a neat sketch explain Hydrological cycle.

7. Write short notes on the following-

   i) Tropopause ii) Water Vapour iii) Isobars

   iv) Environmental Lapse Rate v) Radiation (5 x 2 = 10 marks)

8. With the help of neat diagrams explain seasonal & geographical variation in temperatures over the globe.

9. With a neat diagram explain the working of a Barograph. Give one example each – High pressure, Centre pressure of a Storm & mean sea level pressure.

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