

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – December 2023**  
**Programme Name: B Sc (NS)**  
**Semester: Three**  
**Subject Code: UG21T5306**  
**Subject Name: Bridge Equipment & Watch Keeping I**

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Date: 15.12.2023

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

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General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

**Section A**

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

1. Daylight signalling lamps should be provided with a portable battery with a complete weight of not more than \_\_\_\_\_.

- a) 5.0 kg
- b) 5.5 kg
- c) 6.0 kg
- d) 7.5 kg

2. A clear view screen is a glass disk mounted in a window that rotates to disperse \_\_\_\_\_.

- a) Light
- b) Crowd
- c) Rain, spray and snow
- d) All of the above

3. Index error in a Sextant occurs when the \_\_\_\_\_
- a) Index and horizon mirrors are not parallel to each other when the index arm is set to zero degrees.
  - b) Index and horizon mirrors are not parallel to each other when the index arm is set to 60 degrees.
  - c) Index and horizon mirrors are not parallel to each other when the index arm is set to 90 degrees.
  - d) None of the above
4. The ship's course recorder \_\_\_\_\_
- a) tells the mate on watch how well the helmsman or autopilot is steering.
  - b) Keeps a record of all gyro courses steered.
  - c) The record of which can be used as evidence in the court of Law.
  - d) All of the above.
5. Master's standing orders are \_\_\_\_\_
- a) a set of guidelines to ensure safe ship navigation and operations whether at sea or at port.
  - b) set of guidelines by the Master encompass a very wide array of aspects of navigation and rules of conduct for the officers.
  - c) to be followed at all times by the officer on duty and is duly signed by every officer on board, making them liable to adhere to the orders.
  - d) All of the above.
6. When the Pilot is on board, who is in charge of the conduct of vessel?
- a) The Pilot himself.
  - b) The OOW.
  - c) The Master of the vessel.
  - d) The helmsman.
7. The Magnetic compass bowl is mounted on \_\_\_\_\_
- a) Roman rings.
  - b) Gimbal rings.
  - c) Range rings.
  - d) None of the above.
8. Every vessel has to test its emergency steering gear once in \_\_\_\_\_ and same to record in log book.
- a) 6 months
  - b) 4 months
  - c) 3 months
  - d) 5 months

9. Log book entries at sea is to made \_\_\_\_\_

- a) Commencement of the 4 hours watch.
- b) End of the 4 hours watch.
- c) Whenever the OOW feels appropriate.
- d) None of the above.

10. When is a lookout permitted to leave his station \_\_\_\_\_

- a) at the end of the watch.
- b) 15 minutes before the end of the watch.
- c) only when properly relieved by another lookout man.
- d) at any time.

### **Section B**

Five Questions of 02 Marks each

11. Explain in brief the Integrated Bridge System.

12. Describe the follow-up system of steering on a ship.

13. State the difference between ground reference speed and water reference speed.

14. Describe the physical factors which affect the velocity of sound in seawater.

15. What is meant by an adaptive automatic pilot.

### **Section C**

Seven Questions of 10 Marks each of which any 05 questions to be answered.

16a) Sketch and explain the principle of Sextant. (05 Marks)

16b) Explain the circumstances in which the Officer on Watch (OOW) should call the Master. (05 Marks)

17 a) Explain Janus configuration transducer system in Doppler log and why is it necessary. (05 marks)

17 b) What are the principles for keeping an effective anchor watch? (05 marks)

18 Explain the principle and working of an echo sounder identifying all the components and controls and their individual functions. (10 marks)

19 a) Explain the principle of an Autopilot system and the points to keep in mind while operating the system (5 Marks)

19 b) List the procedure for handing over and taking over bridge watch.  
(5 marks)

20a) What are the duties of a Lookout person on bridge. (05 Marks)

20b) State the Navigation duties of the OOW with Pilot embarked. (05 Marks)

21a) Explain Rate of turn Indicator and state its use on board ship. (04 Marks)

21b) Describe the operation of the course recorder. (06 Marks)

22) Explain the Pilot transfer arrangement as per SOLAS. (10 Marks)