Indian Maritime University

(A Central University, Govt of India)

End Semester Examinations – June 2026

Programme Name: Diploma in Nautical Science

Semester: II

Subject Code: UD11T6207

Subject Name: Bridge Electronic Equipment and Watch Keeping

Date: 09.06.2026	Max Marks: 70
Duration: 03 Hrs	Pass Marks: 35

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. Why 3cm wave radar is considered the main radar?
   a) Lower attenuation
   b) Longer wavelength
   c) Not affected by rain and sea clutter
   d) Better for detecting small targets

2. _____ is a radar's ability to distinguish between two separate targets that are on the same bearing but at slightly different range.
   a) Range accuracy
   b) Range discrimination
   c) Bearing discrimination
   d) Bearing accuracy

3. Which of the following is mandatory equipment that must be connected to ECDIS?
   a) RADRA/ARPA
   b) Positional Navigation Sensors
   c) Track Control
   d) AIS

4. LRIT messages are automatically transmitted at _____ intervals by ship-borne equipment to authorized Data Centres.
   a) 4-hour

b) 6-hour
c) 8-hour
d) 12-hour

5. In BNWAS, Emergency Call feature refers to a manual facility that allows OOW
a) To reset the system automatically
b) To start with first stage audible alarm
c) To immediately activate the second and third-stage remote alarms.
d) To call the master to the bridge

6. When must a proper look-out be kept?
a) Only when entering and leaving port
b) Only in fog
c) Only between the hours of sunrise and sunset
d) At all times

7. 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.

8. A free gyroscope is supported by _____ mountings to allow it to move in all three planes.
a) Precession
b) Torque
c) Gimbal
d) Azimuth

9. The primary purpose of the BNWAS (Bridge Navigation Watch Alarm System) is to:
a) Detect other ships for collision avoidance.
b) Monitor the awareness of the Officer of the Watch (OOW).
c) Record voice data on the bridge.
d) Automatically steer the ship on a planned route.

10. As per the current IMO performance standards, a Voyage Data Recorder (VDR) must be capable of recording data for a minimum duration of _____ hours.
a) 12 Hours
b) 24 Houurs
c) 48 Hours
d) 72 Hours

Five Questions of 02 Marks each

11. Explain how Pulse Length influences both range discrimination and minimum range detection in RADAR.
12. List four specific alarms related to ECDIS safety settings that provide automated alerts to the navigator.
13. Differentiate between AIS and LRIT regarding their reporting frequency (update rate) and communication range.
14. State two specific circumstances under which the OOW must notify the Master immediately as per the Bridge Procedures Guide.
15.Define the properties of gyroscope?

Section C

All Five Questions are of 10 Marks each.

16. You are the OOW on a vessel in restricted visibility. You observe a single echo on the Radar display.

a) Describe the step-by-step procedure to plot an OAW triangle on a relative motion display to determine the target's course, speed, and aspect. (6 Marks)

b) Discuss the specific limitations of radar when operating in restricted visibility and the precautions necessary to avoid spurious interpretations like indirect echoes. (4 Marks)

17. Your vessel is preparing for a voyage through coastal and congested waters using ECDIS as the primary means of navigation.
a) Detail the procedure for route planning on an ECDIS, including safety contour settings and the "route check" function. (6 Marks)

b) Explain the risks associated with "over-reliance" on ECDIS/GPS and why a fix from a GPS receiver cannot always be plotted directly onto a navigational chart without correction. (4 Marks)

18. The relieving OOW arrives on the bridge for a watch handover while the vessel is transiting a high-traffic area during a course alteration.

a) Outline the responsibilities of both the outgoing and incoming OOW during the handover process as per STCW Section A-VIII/2. (6 Marks)

b) List the specific entries that must be made in the deck logbook and the periodic equipment checks required to ensure a safe watch. (4 Marks)

19. a) Describe the working of DGPS. (5) Marks

b) Explain about IRNSS-NavIC. (5) Marks

20. a) What are the major components of LRIT? Explain the operation of LRIT. (5) Marks

b) Describe the working of BNWAS. (5) Marks

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