

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – June 2026
Programme Name: B Sc (NS)

Semester: IV

Subject Code: UG21T6403

Subject Name: ARTIFICIAL INTELLIGENCE AND AUTONOMOUS SHIPS

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

Answer all the questions

10X1=10

1. Which of the following is an application of AI in autonomous ships?
 - a) Manual steering control
 - b) Intelligent route optimisation
 - c) Paper-based navigation
 - d) all
2. One major ethical issue of AI in autonomous ships is_____
 - a) Bias in decision-making algorithms
 - b) Ship color selection
 - c) Anchor weight
 - d) Cabin temperature
3. Which of the following is an internet fraud where the user is convinced digitally to provide confidential information?
 - a) MITM attack
 - b) Phishing attack
 - c) Website attack
 - d) DoS attack
4. A major cyber threat in maritime navigation is--
 - a) GPS spoofing
 - b) Phishing
 - c) Data mining
 - d) File compression
5. IoT-enabled predictive maintenance in ships mainly helps in
 - a) Reducing paperwork
 - b) Detecting equipment failures before they occur
 - c) Improving passenger entertainment systems

- d) Enhancing crew training programs
6. A _____ blockchain is a restrictive or permission based blockchain operative only in a closed network.
7. _____ data includes image, videos and audio files
- a) Structured
- b) Semi-structured
- c) Unstructured
- d) Tabular
8. Big Data and Artificial Intelligence together are mainly used for _____
- a) Manual data entry
- b) Reducing internet speed
- c) Decreasing data storage
- d) Predictive analytics and intelligent decision-making
9. The MASS Code is primarily developed to
- (a) Increase ship cargo capacity
- (b) Standardize design, operation, and safety of autonomous ships
- (c) Replace all existing maritime conventions
- (d) Reduce fuel consumption of ships
10. State true or false - Degree 3 autonomy means The operating system of the ship is able to make decisions and determine actions by itself.

Section B

Answer all the questions

5X2=10

11. Define Machine Learning
12. List any four Cyber security best practices
13. Define M2M
14. Define cloud databases
15. Define Remote Operations Centre

Section C

Answer any 5 questions

5X10=50

16. Define Artificial Intelligence (AI). Elaborate on the various types of Artificial Intelligence (AI) with respect to capability-based and functionality-based classifications. (Marks 10)
- 17.
- a) Elaborate on the various types of Machine Learning with examples (Marks 5)
- b) Explain types of cyber-attacks (Marks 5)
- 18.
- a) Explain cyber security challenges in maritime industry (Marks 5)
- b) Explain CIA vs CAIC model (Marks 5)
- 19.
- a) Explain characteristics of IoT (Marks 5)
- b) Explain different IoT application in shipping industry (Marks 5)
- 20.
- a) Define Blockchain technology. Explain the types of blockchain (Marks 5)
- b) Define Bigdata Explain the types of BigData (Marks 5)

21.

a) Explain Cloud services -- SaaS, PaaS, IaaS

(Marks 5)

b) Explain the advantages autonomous ships

(Marks 5)

22. Define Maritime Autonomous Surface Ship (MASS) Explain the degrees of automation

(Marks 10)

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