

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – December 2023**  
**Programme Name: B Tech (ME)**  
**Semester: IV**  
**Subject Code: UG11T4407**  
**Subject Name: AUTOMATION, CONTROL ENGINEERING AND SAFETY DEVICES**

Date: 29.11.2023

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**

**Choose the correct answer as applicable. [10 x 1 marks]**

1. Full form of PPE in Automation safety is:  
(a) Personal Protective Equipment      (b) Preventive Protective Equipment  
(c) Personal Protective Experiment      (d) None
2. Contactor are used for ship Automation panel  
(a) Short Circuit      (b) Remote Operation  
(c) Over Current      (d) None
3. Circuit Breaker are used for ship Automation panel  
(a) Over Current      (b) Remote Operation  
(c) Short Circuit      (d) None
4. Fuse are used for ship Automation panel  
(a) Short Circuit      (b) Remote Operation  
(c) Over Current      (d) None
5. Thermal overload Relay for ship Automation panel  
(a) Short Circuit      (b) Over Current  
(c) Remote Operation      (d) None
6. Ice Cube Relay for ship Automation panel  
(a) Interfacing & Control      (b) Short Circuit

(c) Over Current

(d) None

7. What is the full form of PTW with reference to ship automation safety?

(a) Person to work

(b) Passion to work

(c) Permit to work

(d) None

8. What is the full form of LOTO with reference to ship automation panel safety?

(a) Line out, tag out

(b) Lock out, Tag out

(c) Lock out, time out

(d) None

9. What is the full form of VFD with reference to Ship Electrical Propulsion Ship?

(a) Variable frequency drive

(b) Variable force drive

(c) Variable forced Diode

(d) None

10. What is the full form of VCB with reference to High Voltage ship?

(a) Vacuum circuit breaker

(b) Vacuum case breaker

(c) Vacuum closed breaker

(d) None

### Section B

**Answer all questions. (5 Nos x 2 marks each = 10 marks)**

11. What is HMI?

12. What is difference between RAM and ROM?

13. List different language in PLC Programming?

14. What is the full form of RTU?

15. What is the difference between Digital and Analog Signal in automation?

### Section C

**Answer any Five questions. (5 Nos x 10 marks each = 50 marks)**

16. Draw the block diagram of SCADA system and explain its application on ship automation? [10 marks]

17. Draw the block diagram of PLC and explain its application on ship automation? [10 marks]

18. What is "open loop" and "closed loop" control system? What is PID control system and how it is used in level control? [10 marks]

19. Draw a DOL Star Delta circuit. Show a programmable relay for start and stop of an electrical motor? [10 marks]

20. What is the importance of Synchro Transmitter and Receiver? Where is it used on board ship? [10 marks]

21. What are the various sensors used in ship automation? What are the differences between sensor and transmitter? [10 marks]

22. What are the various measuring instruments for electrical and electronic equipment used on board ships? What is the importance of 4-20 milli-ampere and how you will measure it? [10 marks]

TAM

