

**INDIAN MARITIME UNIVERSITY**  
**Time Bound Assignment**  
**B Tech (ME) Arrear Examinations**  
**September/October 2020**  
**UG11T2601**  
**Ship Fire Prevention & Control**

Date: 21/09/2020  
Duration: 3 Hrs

Max Marks: 70  
Pass Marks: 35

**Part – A (compulsory)**

**Answer the following (10x2=20 Marks)**

1. State classification of fire as per ISO 3941 or NFPA 10.
2. What are the fire safety objectives stated in Regulation 2 of SOLAS Chapter II-2?
3. Define any two: Pyrolysis, Non-combustible material, Machinery space Category A.
4. Write short notes on Fire door and Fire damper.
5. What type of fire detectors are to be used in accommodation space and in Engine Control Room? Give explanation for your answer.
6. Write Advantages & Disadvantage of CO<sub>2</sub> as extinguishing agent.
7. In a cargo ship of 1000 gross tonnage and above, state the requirements for (1) No of hydrants (2) No of fire hoses.
8. What precautions will you take to prevent fire while carrying out hot work outside designated place of a General Cargo ship.
9. Describe health hazards associated with fire due to heat.
10. Procedure for Re-entering Engine room after fighting the fire with CO<sub>2</sub> flooding system.

**Part – B**

**Answer any 5 out of 7 questions (5 x 10= 50 marks)**

11. (a) Which do you think will burn faster, wooden log cut in to pieces Or Wooden log itself? Explain with fire chemistry. **(2 Marks)**
- (b) Explain fire triangle and fire tetrahedron. **(3 Marks)**
- (c) What is the principal mode of extinguishing fire with water, DCP, Foam & CO<sub>2</sub>. **(2 Marks)**
- (d) What do you understand by 'Explosive limit' Explain why UEL Is not necessarily safe **(3 Marks)**

- 12. (a)** What are the differences between 'Class A-15' & 'Class B-15' Bulkheads. **(4 Marks)**
- (b)** What is the purpose of escape route? State General requirements of escape routes from accommodation and service spaces. **(4 Marks)**
- (c)** What are the flash point limitations of fuel oil used in ship. **(2 Marks)**
- 13. (a)** What are the usual causes of false or accidental alarm from Fire detectors. **(2 Marks)**
- (b)** Which type of fire detector have the fastest response time. Explain why. **(2 Marks)**
- (c)** Describe working of two source ionization chamber fire Detector. **(3 Marks)**
- (d)** Sketch and describe working of a rate of rise in temperature Thermal detector. **(3 Marks)**
- 14. (a)** What is the minimum no of fire pumps required in cargo ship & what should be the capacity of each pump? **(3 Marks)**
- (b)** Draw an international shore coupling with dimension. Why is it required to be kept on ship. **(3 Marks)**
- (c)** Define a portable fire extinguisher. Sketch and label a portable Fire extinguisher (Release mechanism and safety measures must be shown) **(4 Marks)**
- 15. (a)** Draw a line diagram of automatic sprinkler system and describe its operation. **(6 Marks)**
- (b)** Sketch and label a sprinkler head **(2 Marks)**
- (c)** Answer following: Capacity of sea water pump, maximum number of heads in each group, capacity of pressure tank & temperature-range for activation of sprinkler heads. **(2 Marks)**
- 16. (a) In CO2 fixed fire installation for engine room.**
- i)** Explain time delay system. **(2 Marks)**
- ii)** Quantity of CO2 required to be stored **(2 Marks)**
- iii)** Time to discharge CO2 **(1 Marks)**
- (b)** Describe a Fire control plan. In which language it is written **(4+1 Marks)**
- 17. (a)** Describe the emergency organization setup on ship to Combat fire. Write briefly on the duties and responsibilities of each team. **(5 Marks)**

**(b)** Make a list of activities that should be included in a fire drill. **(3 Marks)**

**(c)** As per SOLAS regulations how often the fire drill must be conducted. **(2 Marks)**

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