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**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – December 2025**  
**Programme Name: B Tech – Marine Engineering**  
**Semester: First Semester**  
**Subject Code: UG11T5104**  
**Subject Name: Workshop Technology**

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Date: 13.12.2025	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.

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**Section A**

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

1. Which of the following defects occurs when the deposited metal is not focused on the root of weld?
  - a. Inclusion of slag
  - b. Inadequate penetration
  - c. Incomplete fusion
  - d. Porosity
2. The primary purpose of Lockout-Tagout (LOTO) is to:
  - a. Increase machine productivity
  - b. Prevent accidental start-up of machines during maintenance
  - c. Reduce energy consumption
  - d. Improve machine accuracy
3. Which of the following must not be a characteristic of a quality system?
  - a. It must be well documented and easily understandable
  - b. Products and services actually do satisfy customer expectations
  - c. Emphases on problem prevention
  - d. It must be ineffective
4. The process of enlarging an existing hole to accurate size with a smooth finish is called:
  - a. Counter boring
  - b. Counter sinking
  - c. Reaming
  - d. Spot facing

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5. In the tool signature "8°-10°-6°-8°-15°-16°-1 mm", what does the second angle (10°) represent?

- a. Side rake angle
- b. Back rake angle
- c. Side relief angle
- d. End relief angle

6. Slag is not generated after which of the following welding processes

- a. Manual metal arc welding
- b. Gas tungsten arc welding
- c. Flux cored arc welding
- d. Shielded metal arc welding

7. What does the grade of a grinding wheel indicate?

- a. Size of abrasive grains
- b. Type of abrasive material
- c. Bonding strength of abrasives
- d. Wheel speed

8. Devices that limit or prevent access to the hazardous area in, on or near a machine or stops the machine in hazardous presence include

- a. Presence sensing device
- b. Pullback device
- c. Restraint device
- d. All of the above

9. Lapping is a precision finishing operation for:

- a. Improving geometrical accuracy
- b. Refines surface finish
- c. Achieving high dimensional accuracy
- d. All of the above

10. Which among the following chucks in the lathe machine is also known as "Universal Chuck"?

- a. Magnetic Chuck
- b. Face Plate
- c. Three jaws chuck
- d. Four jaws chuck

**Section B**

Five Questions of 02 Marks each

11. Mention the various PPE used in Engine room on board ship.

12. Describe the function of half nut in lathe machine?

13. Explain the importance of correct polarity selection in arc welding.

14. Briefly explain the principle of Friction Welding?

15. What are different types of fits? Give at least one example of each type of fit?

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### Section C

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

16. a) Explain the function of file used in the workshop and discuss any 4 types of files on the basis of shape with the help of diagram.  
b) Discuss the function and type of the steady rest used on the lathe machine?  
(5 + 5 marks)
17. a) Explain the various types of chips produced during the machining operation.  
b) Illustrate the construction of vertical milling machine with the help of diagram.  
(3 + 7 marks)
18. a) Explain with a sketch the working of a radial drilling machine. State its advantages over other drilling machines.  
b) Explain the difference between the shaper and planer machines.  
(6 + 4 marks)
19. a) Describe the nomenclature of a single-point cutting tool. Support your answer with a neat sketch.  
b) Explain the important properties and functions of cutting fluids used in machining operations.  
(4 + 6 marks)
20. a) Describe the different flames produced in gas welding, their uses, and illustrate them with a neat sketch.  
b) With the help of a diagram, describe the principle of TIG welding.  
(6 + 4 marks)
21. a) Mention various components of the carriage and explain function of carriage components?  
b) Describe lapping and honing operations with the help of diagram.  
(5 + 5 marks)
22. a) What is coordinate measuring machine (CMM)? Discuss the construction of coordinate measuring machine (CMM) with the help of neat sketch.  
b) Draw neat sketches of a feeler gauge and a hermaphrodite calliper. Explain their construction and uses in a marine workshop.  
(5 + 5 marks)
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