

Indian Maritime University
(A Central University, Govt. of India)
Supplementary Examinations – March/April 2025
Programme Name: B Tech (ME)
Semester: II
Subject Code: UG11T4206

Subject Name: Marine Electrical Power Generation and Distribution

Date: 20.03.2025

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/ True or False(T/F) of 01 Mark each –
Choose the correct answer for MCQ/Fill with correct answer/Mark (T/F),
as applicable. All Questions compulsory.**

1. The Desired Electrical supply specification of a Cargo ship is.
a) 110V 60Hz b) 230 50Hz c) 380V 60Hz d) 440V 60Hz
2. The Emergency Generator & Batteries drive _____ Ship Services.
a) Non-Essential b) Essential c) Navigational d) All
3. The Fleming's Right hand rule is used to understand the principle of a _____.
a) Motor b) Transformer c) Relay d) Generator
4. The _____ is not a part of a DC Generator.
a) Armature b) Field c) Commutator d) Exciter
5. A 3-phase star connected output voltage is ___ times more than that of a single phase?
a) 2 b) 3 c) $\sqrt{3}$ d) $\sqrt{2}$

6. The ship board general alarm system must receive its main source of power

- (a) A storage battery
- (b) Emergency generator
- (c) An auxiliary generator
- (d) Ships main service generator

7. Ship's Transformers are _____ cooled.

- a) Oil b) Water c) Air d) None of these

8. Interlocks between ship's Main & Emergency generators is provided to avoid_____

- a) Parallel running b) Series running c) Meet less load d) None of these

9. Which of the following 3-phase connection do not have a Neutral?

- a) Star b) Delta c) Zigzag d) None of these

10. The Symbol given below represents



- (a) Generator
- (b) Motor
- (c) Transformer
- (d) Circuit breaker

Section B

Five Questions of 02 Marks each. All Questions compulsory.

11. What is a circuit breaker? Name any one type of CB used in ship

12. What are the types of AC Generators based on construction.

13. Describe how a generator is cooled.

14. What is the function of a Commutator in a DC Generator?

15. Define Polarity of a Transformer.

Section C

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

16.

a) Briefly describe the common sources of Electrical Power in Ships. (5)

b) Name the salient components of the Ship's Power Distribution System.

Why we require more power during Manoeuvring. (5)

17. Explain the need for shore supply and with neat sketch explain shore supply connection box and procedures to be followed. (10)

18.

a) Sketch a diagram showing the arrangement of a simple Direct Current (DC) Generator marking the various parts. (5)

b) Explain the working of the above DC Generator. (5)

19. Draw a neat system diagram of a Ship's Electrical distribution system and mark the parts. (10)

20. Derive the RMS value, average value, form factor and peak factor for ac sinusoidal voltage (10 Marks)

21. Explain briefly the following: -

(i) a Single line or one-line diagram. (5)

(ii) a Schematic or elementary diagram. (5)

22. Distinguish between Low Voltage & High Voltage Distribution systems. (10)