

## COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

### B.TECH. DEGREE VI SEMESTER EXAMINATION IN MARINE ENGINEERING JUNE 2020

#### MRE 1602 MARINE ELECTRICAL TECHNOLOGY (2013 Scheme)

Time: 30 Minutes [for Answering and Scanning/Uploading the page of the Answer Sheet]  
per module

Max. Marks: 14 per module

#### INSTRUCTIONS

1. You have to be available in Google Meet on demand by the faculty.
2. You have to share your '**live location**' to the faculty before uploading the answer sheet.
3. You have to answer only one question.
4. Answer may not exceed one page of an A4 size paper in a standard handwriting, as far as possible.
5. If at all an answer goes beyond one page, (due to your handwriting) another page can also be used. In such a situation, the page number should be given as 1/2, 2/2.
6. You have to put dated signature along with Register Number, Subject Code, Module/Group Number (as given in the Question Paper) in each page.
7. You have to put the Question Number correctly.
8. After answering the question, you have to scan and upload the answer page.

#### MODULE - I

(Answer **ANY ONE** question)

- I(1). (a) Electrical apparatus manufactured primarily on land is not suitable for installation in a marine environment. Why? (4)
- (b) Describe a brushless alternator with a neat sketch. (10)

#### OR

- I(2). (a) Describe the procedure for giving shore power supply stating necessary precautions to be taken. (10)
- (b) Why is it essential to know whether the phase sequence of the incoming shore supply is 'correct'? (2)
- (c) Suggest three reasons why protection equipment is essential in an electrical distribution system. (2)

**MODULE - II**

(Answer **ANY ONE** question)

- II(1). (a) What is insulated neutral and earthed neutral system? Which system is preferred on board ships and why? (11)  
(b) A 10A motor operates from a 220V insulated system. The supply cables have a total impedance of  $0.01\Omega$ . If (i) an open-circuit fault (ii) an earth fault (iii) a short-circuit fault occurred, what circuit current would flow in each case? (3)
- OR**
- II(2). (a) Write a short note on IP number. (4)  
(b) (i) Sketch the main parts of a three phase induction motor. (5)  
(ii) Is three phase induction motor self starting? Justify the statement. (5)

**MODULE - III**

(Answer **ANY ONE** question)

- III(1). (a) Sketch and explain a navigation light indicator panel on wheel house. (9)  
(b) State the requirements and regulations of navigational lights in ships. (5)
- OR**
- III(2). (a) Explain how high and low level alarms are monitored in tanks. (10)  
(b) Write a short note on salinometer. (4)

**MODULE - IV**

(Answer **ANY ONE** question)

- IV(1). (a) A cage - rotor induction motor has been flooded with seawater and its insulation resistance is down to zero  $M\Omega$ . What is the procedure for putting the motor back into service? (4)  
(b) Explain the different types of maintenance procedures followed onboard. (10)
- OR**
- IV(2). (a) Why should the measurement of the insulation resistance of a machine be made while the machine is hot? (2)  
(b) What are the precautions to be taken against electric shock and related hazards? (12)

**MODULE - V**

(Answer **ANY ONE** question)

- V(1). (a) Describe the advantages of electric propulsion over conventional system. (8)  
(b) How are tankers classified? Explain. (6)
- OR**
- V(2). (a) Explain the role of zener diode safety barrier in intrinsically safe circuit with a sketch. (8)  
(b) Explain how a flame proof enclosure is used to provide electrical safeties in hazardous areas. (6)