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B.Tech. Degree VI Semester Regular/Supplementary Examination in Marine Engineering June 2024

19-208-0602 MARINE ELECTRICAL TECHNOLOGY (2019 Scheme)

Time: 3 Hours

Maximum Marks: 60

Course Outcome

On successful completion of the course, the students will be able to:

- CO1: Understand the electrical power generation, emergency power, and associated controls.
 CO2: Understand the electrical power distribution system on the ship and protective devices for machines and motor controls.
 CO3: Acquire knowledge about high voltage systems.
 CO4: Illustrate the maintenance and operation of electrical machines and equipment on a ship.
 CO5: Identify various faults in electrical systems on the ship and acquire knowledge of instruments for fault finding and preventive maintenance.

Bloom's Taxonomy Levels (BL): L1 – Remember, L2 – Understand, L3 – Apply, L4 – Analyze,
 L5 – Evaluate, L6 – Create
 PI – Programme Indicators

(Answer **ALL** questions)

(5 × 15 = 75)

		Marks	BL	CO	PI
I.	(a) Explain the regulations of Electrical Installation on board.	6	L2	1	1.4.1
	(b) What is the effect of change in supply voltage and change in supply frequencies on the torque and speed of induction motors? Explain the practical difficulties due to both cases with respect to shore supply connections.	9	L1	1	1.4.1
OR					
II.	(a) With a neat diagram, explain the general scheme of ship's power distribution system.	8	L1	1	1.4.1
	(b) List the essential and non-essential electrical loads in a typical ship. Explain the emergency system on board.	7	L1	1	1.4.1
III.	(a) According to variations in temperature, what are the different classes of cable insulation?	5	L2	2	1.4.1
	(b) What is the purpose of a protective device in an electrical system? Explain the working of ACB in detail.	10	L1	2	1.4.1
OR					
IV.	What is the purpose of a starter for an AC motor?	15	L1	2	1.4.1
	(i) Explain the DOL starter.				
	(ii) Compare soft starting technique with conventional starting methods.				

(P.T.O.)

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		Marks	BL	CO	PI
V.	Explain the following with diagrams. (i) Salinometer. (ii) Windlass. (iii) O2 analyser.	15	L2	3	3.1.1
OR					
VI.	Explain on board emergency radio operation in detail.	15	L2	3	3.2.1
VII.	(a) Explain different types of faults that may occur in a distribution system.	10	L2	4	4.1.3
	(b) Explain preventive maintenance.	5	L1	4	1.4.1
OR					
VIII.	(a) Describe routine maintenance carried out on AC induction motor.	10	L2	4	1.4.1
	(b) Describe periodic survey requirements of steering gear.	5	L2	4	1.4.1
IX.	(a) Write a short note on any one type of Diesel Electric Propulsion system with a neat sketch.	7	L2	5	1.4.1
	(b) Discuss the Hazardous zones in tanker vessels. Describe the types of Electrical Equipment/circuits used in Hazardous ships.	8	L2	5	1.4.1
OR					
X.	(a) Explain the working of Turbo alternator.	5	L2	5	1.4.1
	(b) What is meant by Ex- protection? Explain briefly each type.	10	L2	5	1.4.1

Bloom's Taxonomy Levels

L1 = 36%, L2 = 64%.
