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B.Tech. Degree VI Semester Regular Examination in Marine Engineering June 2022

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 ship and protective devices for machines and motor controls.
 CO3: Acquire knowledge about high voltage system.
 CO4: Illustrate the maintenance and operation of electrical machines and equipment on a ship.
 CO5: Identify various faults in electrical system on 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

PO – Programme outcomes

		(5 × 15 = 75)	Marks	BL	CO	PO
I.	(a)	Differentiate between static and rotary excitation systems used on board. Which type is best suited where heavy and frequent load surges arise?	10	L1	1	1.4.1
	(b)	Describe why protection devices are essential in an electrical distribution system.	5	L2	1	1.4.1
OR						
II.	(a)	Name main components in AVR and explain how it is used to regulate the output voltage of an alternator.	10	L2	1	1.4.1
	(b)	Explain rules, regulations and requirements of emergency batteries.	5	L1	1	1.4.1
III.	(a)	Explain insulated and earthed neutral systems. Among these, which is preferred in ships and why?	5	L2	2	1.4.1
	(b)	Draw and explain the system diagram of a typical electrical distribution system on board a ship.	10	L1	2	1.4.1
OR						
IV.	(a)	Explain the difference between the following motor enclosures. (i) Drip proof (ii) Totally enclosed (iii) Deck watertight (iv) Flameproof.	5	L2	2	1.4.1
	(b)	Explain the different protective methods of induction motors.	10	L1	2	1.4.1
V.		Explain how high and low-level alarms are monitored in tanks.	15	L2	3	3.1.1
OR						
VI.		Write short notes on: (i) RPM and revolution counter (ii) Centralized salinity indicator (iii) Navigation lights.	15	L1	3	3.2.1

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VII.	(a)	Draw and explain the circuit diagram of a megger and explain how it is used to find the insulation resistance of a motor.	10	L2	4	4.1.3
	(b)	Explain different types of faults that may occur in an alternator.	5	L1	4	4.1.1
OR						
VIII.	(a)	What are the precautions to be taken against electric shocks and related hazards?	10	L2	4	4.1.1
	(b)	Describe the survey requirements for parts of the steering gear.	5	L1	4	1.4.1
IX.	(a)	Describe with a sketch a Turbo-electric propulsion system.	10	L2	5	1.4.1
	(b)	Explain how a flameproof enclosure is used to provide electrical safety in hazardous areas.	5	L2	5	4.1.1
OR						
X.	(a)	What is meant by 'Ex' protection? Explain briefly.	10	L2	5	4.1.1
	(b)	How are tankers classified? Explain.	5	L1	5	1.4.1

Blooms's Taxonomy Levels

L1 - 47%, L2 - 53%.
