Question Bank

Course	B.E(EEE-Marine)
Batch	17
Semester	VII
Subject code	EE1706
subject Name	Marine Electrical System Design & Layout

PART-A **Marks: 2**

UNIT-1

1. Write the comparison of A.C. over D.C.?
2. Why three phase induction motor is self starting motor?
3. Write the relationship between speed and frequency for 3 phase induction motor.
4. What are the types of three phase induction motor?
5. What are the advantages of three phase induction motor?
6. What is the principle of three phase induction motor?
7. Why squirrel cage motor rotor slots are slightly skewed?
8. Write the Difference between synchronous motor and induction motor
9. What is crawling of an induction motor?
10. What is cogging?
11. Draw the speed torque characteristics of induction motor?
12. Write the torque equation of three phase induction motor
13. What is the necessity of the starter?
14. What are the types of starter used for induction motor?
15. What are the protection coil used in starters?
16. what are the starting methods used for Squirrel cage induction motor?
17. What are speed control methods available for Induction motor?
18. What are the types of rotors used for slip ring induction motor
19. Draw star-Delta starter.

PART-B **Marks: 6**

UNIT-I

1. Draw and explain torque-slip characteristics of three phase induction motor
2. Draw and explain the construction of three phase induction motor
3. Draw and explain DOL Starter
4. Draw and explain Auto transformer starter
5. Explain the start-delta starter with neat sketch

6 Explain the various methods availble for controlling the speed of an induction motor from stator side
7 Explain the various methods availble for controlling the speed of an induction motor from rotor side
8 Explain crawling and cogging in Induction Motors
9 Draw and explain double squirrel cage induction motor
10 What are the differences between synchrnous motor and induction motor
11 Draw and Explain Variable voltage control of an induction motor

PART-C **10 Marks**

UNIT-1

1 Draw and write the working principle of 3 phase induction motor
2 Explain the various starting methods associated with the induction motor with necessary expressions
3 What are the various controlling methods used for induction motor control?
4 Draw and explain Constant V/F Control of induction motor
5 Explain Variable voltage control of an induction motor with necessary diagram
6 Explain Variable frequency control of an induction motor with necessary diagram

UNIT-2

1 What is Inverter?
2 What do u mean by harmonics in inverters?
3 What are the advantages of PWM?
4 What are advantages of PWM?
5 What are the types of PWM?
6 What is modulation index?
7 What is frequency ratio?
8 What is THD?
9 What is SPWM?
10 Define SVPWM?
11 Draw the hexagone boundary of SVPWM?
12 Write the Fourier equation of Quasi square wave PWM.
13 Write the Fourier equation of End pulse modulation wave PWM.
14 Write the Fourier equation of center pulsee modulation wave PWM.
15 Draw the schematic diagram of SPWM?
16 Draw the schematic diagram of SPWM?
17 Define deadtime.
18 What are the softwares are availble for simulation of Power electronics circuits?
19 What is simulation? What is the necessity of simulation?
20 What are the sources of harmonics?

PART-B **Marks: 6**

UNIT-2

1 Derive the fourier expression for SPWM with necessary waveform.

2 Write the short notes on space vector modulation scheme
3 Draw and explain unipolar pulse width modulation
4 Draw and explain bipolar pulse width modulation
5 Draw and explain LC Filters used in Inverters
6 Write the difference between VSI and CSI
7 Write the importance Multi level inverter with one example
8 Write the short notes on Matrix converter
9 Write the short notes on third harmonic injection PWM
10 Write short notes on Simulation tools available for power electronics

PART-C **10 Marks**

UNIT-2

1 Draw and explain the method of eliminating the 5th and 7th harmonics by using SHE PWM
2 Draw and Explain the working principle of H-bridge Multi level inverter for 7 level
3 Derive the fourier expression for Quasi-Square wave modulation with necessary waveform and harmonic analysis
4 Derive the fourier expression for End pulse modulation with necessary waveform.
5 Derive the fourier expression for centre pulse modulation with necessary waveform.
6 Draw and explain the SPWM for inverters with necessary waveform.

UNIT-3

1 Write any four characteristics for a good primary cell
2 What is Electrochemical reaction?
3 Classify Lead acid batteries.
4 Define initial charge
5 Define Normal charge
6 Define Equalizing charge
7 Define Floating charge
8 What do u mean by charging rate?
9 define quick charge
10
11 What is single rate charger?
12 What is two rate charger?
13 define smart charger
14 define battery efficiency
15 What are the modes available in smart charger?
16 Write any four Do's while handling batteries
17 Write any four Don'ts while handling batteries

18 How does the recycling process works
19 Write any two SOLAS rules
20 Draw the block diagram of Battery charger

PART-B **Marks: 6**

UNIT-3

1 What are the characteristics are required for a good primary cell ?
2 What are the additional features in some larger,serviceable Wet cells?
3 What are the main features of Sealed lead-acid batteries?
4 What is the use of battery charging equipment?
5 What are the types of charging available for Battery charging?
6 Explain the concept of charging with supply from DC source
7 What are the steps to simple steps to select the correct charger?
8 Explain the calculation of battery charger's capacity
9 What are the effects of leaving batteries in a discharged conditions
10 Draw and explain operating principle of smart charger
11 What are the electrical characteristics of Lead acid cell?
12 How to specify battery capacity and battery efficiency?
13 Explain about the discharging action.

PART-C **10 Marks**

UNIT-3

1 Explain the working principle of Flooded cell battery
2 Explain about the Electrical characteristics of Lead acid cell
3 Explain the concept of charging with supply from AC source with specifications.
4 Draw and explain Automatic thyristor controlled battery charger
5 What are the safety measures when working with batteries

UNIT-4

1 What are the types of cables used in marine?
2 What are the most important factors considered while choosing insulating material?
3 Why copper is good choice for selecting conductors?
4 define positive temperature coefficient of a material
5 define cable tags.
6 define distributed cables
7 what do mean by control cables?
8 define signaling cables
9 What are the various classes on insulations?
10 What is the use of Flame test?

11 What is rated current?
12 define rated voltage
13 what is rated frequency?
14 define rated power of a motor
15 define rated speed?
16 what is the use of bow thrusters
17 what is cable tray?
18 What are the insulating material used for cable?
19 What do mean by crimping the lug
20 what is the purpose of lux meter?

PART-B **Marks: 6**

UNIT-4

1
2 What are the practical tips on wiring?
3 What are the ways to minimizing the electromagnetic interference?
4 Write the summary on SOLAS Regulation on cables.
5 Explain the conductor insulation.
6 Explain the terms Insulation resistance and dielectric strength
7 Explain any five insulating materials used for insulation.
8 Explain the properties and use of cable sheath
9 Draw and explain bow thrusters
10 Draw and explain about the crimping the lug
11 What are the motor ratings with respect to temperature
12 draw and explain ordinary filament lamb
13 draw and explain ordinary incondescent lamb

PART-C **10 Marks**

UNIT-4

1 What are the methods adopted for determining the cable sizes?
2 Explain about the various classes of insulations.
3 Explain the properties and use of cable sheath
4 Explain about the various lights used in ships
5 What are the insulating materials generally used in low to medium power AC motor?
6 How to determine of Hot temperatures of the motors?

UNIT-5

1 define single line diagram
2 Define MCB
3 define MCC
4 Write any two primary essential services in marine

5 Write any two secondary essential services in marine
6 Draw the block diagram of off line UPS
7 draw the block diagram of ships electrical system
8 Draw the block diagram of ON line UPS
9 write any two essential services required in marine electrical systems
10 What are the functions of emergency generators?
11 What are the functions of emergency switch board?
12 What are the voltage requirements in marine?

13 What is UPS?
14 What is on-line UPS?
15 What is OFF line UPS?
16 What are the frequency requirements in marine?
17 What is power circuit
18 What is branch circuit?
19 What are the functions of emergency stop panel

20 What is emergency switchboard?

PART-B **Marks: 6**

UNIT-5

1 Draw and explain the symbols used for single line diagram
2 Draw and explain schematic of power distribution systems in marine
3 What are the primary essential services required in marine
4 What are the secodary essential services required in marine
5 Explain about the essential services required in marine
6 How to trace and analyse the Electrical circuits used in marine?
7 What are the different ways available for trouble shoots in marine electrical system?
8 Draw and explain Main switch board in marine electrical systems
9 Draw and explain Main control circuits in marine electrical systems
10 What are the auxialiary services required for marine electrical systems
11 What are the essential services required for marine electrical systems
12 Draw and expain OFF line UPS
13 Draw and explain ON Line UPS
14 explain voltage and frequency requirements in marine electrical systems
15 Explain basic power management systems in marine

PART-C **10 Marks**

UNIT-5

1 What are the primary and secondary services required in marine?
2 Draw and explain modern ship's typical electrical system
3 Explain typical electrical system diagram

4 How to trace and analyse the Electrical circuits used in marine?
5 What are the different ways available for trouble shoots in marine electrical system?
6 Draw and explain various types of UPS used in marine