BE (Marine Engineering)
Semester : VIII
Subject : Electro Technology

Unit-1

PART - A (2 Marks)

What is A.C and what are the advantages of A.C. over D.C.?
Write the advantages of stationary armature and rotating field?
Write the definitions on average value and form factor?
Why synchronous motor is superior to induction motor?
Write the advantages and disadvantages of 3-phase induction motor.
What is the main difference in squirrel cage and slip-ring induction Motor?
What are the different methods of starting A.C Motor?
What is the working principle of a D.C Generator?
What are the different types of D.C Generator?
What is interpoles and what is its function?
What is the working principle of a D.C. Motor?

PART B(6 MARKS)

What are the different types of D.C Motor?
What precautions will you take before switching on power on completion of maintenance of air compressor?
What is power factor? What all are the adverse effects' of low power factor.
What is synchronization? Explain the synchroscope method in detail with neat diagram
With neat sketch explain the varies parts and functions of each part of D.C Generator
With neat drawings, explain the construction of marine brushless alternator.
Write the advantages and disadvantages of 3-phase induction motor.
What are the advantages of poly phase over single phase? Explain 03 phase four wire system
What are salient and nonsalient poles ,and what are the differences?

PART - C (10 Marks)

Explain the function of rotating rectifier in AVR with suitable sketches?
started?
What is aramature reaction? How aramature reaction is reduced in DC machines?
Draw a simple sketch of shunt,series ,compound motors and state their differences?

Unit-2

PART –A (2 marks)

What is micro and macro shock?
What is static electricity?
Which chapter you refer to for electrical safety and installation in solas?
What do you mean by internsically safe?
What is explosion proff fittings?
What is arc blast in HV system?
What precautions you take before you work on a welding machine?
What precautions you take before you work on a high voltage equipment?
What extinquishers you use on electrical fire?

PART - B (6 Marks)

What precautions will you take while rescuing a person unconscious with electrical shock?
What precautions will you take while working on a mast?

What precautions will you take while working on main bus bars of switch board?
What precautions will you take before switching on power on completion of maintenance of air compressor?
With neat sketch explain the varies parts and functions of each part of D.C Generator

PART –C (10 Marks)

Draw and explain the emergency generators manual and emergency starting flow chart
Explain the insulating materials with classes of insulation indicating the temperature
Draw the diagram of basic emergency lighting circuit.
What are all the hazards of live electrical system and explain the inherent dangers and avoidance of disastrous consequences
What is the fundamental requirement for safe installation of electrical equipment?

Unit -3

PART - A (2 Marks)

Write short motes on low and high voltage circuit breakers?
How many different methods are there for starting emergency generator?
Classify the marine switch boards?
What is the electrical interlock provided between MSB & ESB?
What is isolated neutral system? Where do we use it?
What is earthed neutral system? Where do we use it?
What is the significance of earth faults?
What is incandescent lamp draw the diagram?
Mention the summary of 'SOLAS' regulations on emergency lighting?

PART - B (6 Marks)

Draw and explain a main switch board layout.
Draw a diagram of shore supply arrangement with ship supply connection box and what checks to carry out before connecting?
Draw and explain the emergency generators manual and emergency starting flow chart
Describe the isolated neutral system & earthed neutral system in 3-phase distribution and significance of each
Draw and explain the general distribution scheme onboard a ship:
Explain A.C transmission & distribution system and compare dc & ac transmission & distribution
Explain the insulating materials with classes of insulation indicating the temperature
Draw the diagram of basic emergency lighting circuit.
Explain with the table on typical illumination levels on board the ships

PART - C (10 Marks)

Explain with the neat sketch the functions of air circuit breaker (ACB) for alternators
Draw and explain a main switch board lay out with protections?
Draw and explain the emergency generators manual and emergency starting flow chart
Draw a neat line diagram of a electrically propelled ship using high voltage and explain?
Explain with diagrams three phase three wire system and three phase four wire system?
How do you detect earth faults on a ship?draw a diagram for earth fault indicator?

Unit -4

PART - A (2 Marks)

What is the difference between thyristor and a diode?
State atleast two trips on an alternator?
State two differences between brushless and slip ring alternators?
What are the important points to be noted concerning fuses?
What all are the basic requirements of steering gears protection circuit/?
What are the conditions for parallel operations of generators?
What is the purpose of timer in star delta starter?
What is a function of a governor in a diesel engine with respect to paralleling?
What factors decide selection of starters and give example of a motor in ship with starter delta starter

PART - B (6 Marks)

What all are checks are done on motors when receiving after re-winding
What is cathodic protection (ICCP) and explain modes of operation
Explain with neat diagram electro – hydraulic steering control follow up system
Explain with sketches construction of a brushless alternator?
What is the purpose of air gap and how do you measure it ?
What is synchronoscope and expalin with diagrams?
What is the effect of loss of exitation?
What is under voltage trip?when it is activated?
What is reverse current trip and how do you test it ?

PART - C (10 Marks)

What is synchronization? Explain the synchroscope method in detail with neat diagram
What is AVR? Why do we need an AVR? With a suitable diagram explain the working of a thyristor controlled AVR?
draw main swich board lay out and mention the components?
Draw a emergency lighting system lay out and explain?
Draw a vacuum circuit breaker and explain its importance in high votage?

Unit-5

PART A

What is short circuit test of an alternator and how did you do it?
What is soft starter ?
What is auto transformer starter?
What is a dol starter?
Why incoming generator tobe slightly on higher speed than the generator on load?
Why you have a star delta starter?
What is the difference between autotransformer and transformer?
What is purpose of timer in star delta starter?

PART-B(6 marks)

diagram?
What is turning gear interlock and briefly state operation?
What did you learn from the experiment when the load on the alternator was increased?
experiment?
.draw the auto transformer starter and draw the circuit as fitted.
.What did you learn from the experiment when the load on the alternator was increased?

.What is open circuit test of an alternator? How did you do it?
What are various types of fuses?
What is control voltage in a starting circuit?Draw a simple circuit showing control voltage?
PART-C
With neat drawings, explain the construction of marine brushless alternator.
What factors decide selection of starters and give example of a motor in ship with star delta starter
What all are checks are done on motors when receiving after re-winding
Draw and explain reverse power relay and its working?
Draw a circuit showing thermal overload relay in a circuit and explain its operation?