# Question Bank BSc N.S.

## Marine engineering and control system

1. What is case hardening and explain its advantage?

Give example of component, which may have this treatment.

1. Explain briefly the following terms, which are often used with regard to engineering materials.
   1. Annealed b. Case hardened c. tempered d. nitrided
2. State the approximate proportion of carbon contained in
   1. Cast iron b. cast steel and mention the form in which the carbon may occur therein
3. Define ductility, brittleness, malleability, elasticity, plasticity,

Hardness, strength, toughness

1. Describe the effects of varying the percentages of the following constituents on the physical properties of steel a. carbon b. phosphorous c. manganese d. molybdenum.
2. Give the approximate composition and properties of following metals a. manganese bronze, b. cupro nickel

c. Babbitt metal

1. Explain the use of compressed air on board the vessel and what are the societies requirement with respect to compressors and air receivers.
2. Sketch and describe main air receiver fitted on a board vessel and list the mounting and explain the function of same.
3. Sketch and describe two-stage air compressor?

10.Sketch and describe three-stage air compressor?

11.Show with PV diagram the effect of multistage compression?

12. Sketch and describe fresh water hydrophore system fitted on board and explain the use of compressed air in the system?

13. Explain with suitable sketch the single effect shell type evaporator?

1. Explain with suitable sketch the double effect shell type evaporator?
2. Sketch and describe vacuum type low-pressure fresh water generating system?
3. Explain with suitable sketch the function of flash type evaporator?
4. With respect of fresh water generation on board vessel explain demisters, ejectors, salinometer and brine.
5. Explain the purpose of water treatment for domestic purpose with line diagram?
6. Sketch and describe vertical smoke tube boiler showing gas, steam and water flow?
7. Sketch and describe Water tube boiler showing gas, steam and water flow?
8. Sketch and describe tank type boiler with important dimensions?
9. List the mounting and explain the function of water tube boiler?
10. With aid of simple sketch explain how a water gauge is fitted directly to the boiler is tested for accuracy when boiler is steaming?
11. Explain the different waste heat recovery system suitable for diesel engine?
12. Explain the reasons for maintaining feed water in good condition?
13. Explain with respect to boiler water treatment chlorides,

ph value and alkalinity?

1. List the components of refrigeration system and explain their functions?
2. Give reasons for the following in refrigeration system

a. Short cycling b. low lub oil pressure c. High discharge

Pressure.

1. Sketch and describe thermostatic expansion valve?
2. Sketch and describe Air conditioning plant fitted on board?
3. Sketch and describe Dehumidifier?
4. How pumps are classified and give examples of pump used for various duties on board?
5. Sketch and describe single acting reciprocating pump?
6. Sketch and describe a gear pump?
7. Sketch and describe the working principle of centrifugal pump? Why are wear rings fitted in centrifugal pump?
8. What are the basic requirements of steering gear? Represent the steering gear system of a ship by a block diagram?
9. Explain the telemotor, hydraulic transmitter with a sketch?
10. Explain the telemotor, hydraulic receiver with a sketch?
11. Explain the construction and working of heleshaw pump?
12. Make a labeled sketch of two ram hydraulic steering gear?
13. State the purpose of hunting gear. Sketch and describe the working principle of hunting gear as fitted to hydraulic steering gear?
14. Explain the rotary vane steering gear system with line diagram and label the parts

43.Draw the circuit diagram of ward Leonard system and

explain how the system operates?

44.Expain power generation, primemover, ECR,MOB and

busbar.

45.Explain AC motor synchronous squirrel cage induction motor.

46.Explain AC brushless self excited Alternator?

47.Working principle of dc motor and dc generator?

48.writes short notes oncycle,frequency,1- phase,2-phase,

3-phase, in-phase, out-phase 9draw diagram)?

49.Write down briefly : a) parallel running of Alternator

b) Synchronous and Load sharing?

50. write short notes on GSP, Crane, ACB,Y Winding configuration?

51. The instrument fitted on the MSB and explain their function?

52. Write short notes : Effect of over load, Short circuit, breakers( 1pole,2pole,3pole),Fuses and types ?

53. Explain with diagram flwg: a) Transformer working principle , Step up and down transformer, types of transformer,

Transformer efficiency ?

54. Draw and explain the Flourescent light working

in the Normal bulb (incandescent lamp). Why the vacuum is there inside and what filament is fitted inside and why?

55. what is excitation and its need, types of excitation, relation between frequency and speed , pairs of Magnetic Poles and

speed (rpm) ?

56. Electrical Safety Precaution Do”s and Donots (5 points ) ?

QUESTION BANK BSc N.S. (MECS)

**PART A**

1. Classify ships as per propulsion.

2. Name different types of ship

3. What is the use of Main Engine

4. Name the components from M/E crank shaft to propeller

5. What is fitted on cylinder head

6. What is entablature

7. What is scavenge space

8. What is a Turbo charger

9. What is Crank case relief door

10. What is a bed plate

11. What is a Tie rod

12. Where is bulk fuel oil stored

13. Name type of fuel oil

14. What is the use of fuel oil settling tank

15. How is the oil heated

16. How is Fuel oil treated

17. Name different types of Steam Turbine

18. How is cargo oil pumped out

19. Name types of propellers

20 Which part is the propeller fitted

21. Name types of steering gears

22. Why is fin stabilizer used

23. What is the rule for Rudder movement

24. How to communicate between Bridge & Steering flat

25. Name the space through which rudder stock passes

26. Name the winches on deck

27. What is the use of Bow thruster

28. Define real slip & apparent slip

29. What is use of provision crane

30. What is the use of chain locker

31. How does the ship move

32. How is the tail shaft supported

33. How do you arrive at bunker fuel required for a voyage.

34. What is the regulation for Oily water separator

35. What is the rule for disposal of sewage from ship

36. What is an Incinerator

37. What is the prime mover of an Alternator

38. What is the meaning of parallel running of Alternators

39. What is step down transformer

40. What is the safety found in an electrical circuit

41. What are Safety trips on alternator side

42. What Safety trips found on the prime mover

43. What type pump used for Fire fighting

44. What type pump used for bilge system

45. What type pump used for fuel oil transfer

46. What is an open loop system

47. What is closed loop system

48. What is diaphragm control valve

49. How is the depth of sea bed measured

50. Which system has gear pump fitted

**PART B**

1. Name types of propulsion plant

2. Name the systems needed to run a Main Engine

3. Name the different tanks which contain Heavy fuel oil

5. Why is Heavy fuel oil purified on board

6. What are the prime movers of C.O.P

7. What safety fitted in steering gear system

8. What are the hydraulic steering systems available

9. What is the use of fin stabilizer

10. What is Follow up and Non follow up in the steering gear system

11. Name the deck machineries

12. Explain how a bow thruster works

13. Explain how emergency steering is done

14. How does C.P.P. works

15. What is propeller pitch

16. How is the propeller shaft cooled

17. Calculate the fuel consumption of a ship from port A to port B

18. Give the procedure to pump out engine room bilges

19. Name different trips found in an Alternator

20. Name different trips found in Diesel engine

21. Why is step up step down transformer used

22. Name positive displacement pumps

23. How is less volume of water pumped out from Ballast tanks.

24. Show the flow chart of steering system from bridge to steering flat

25. Sketch a closed loop system

**PART C**

1. Detailed sketch of fuel oil system from storage tank to engine fuel valve.

2. Write notes on Impulse Turbine & Reaction Turbine, what is the difference between the two

3. Sketch & describe Rotary vane system.

4. Sketch & explain the function of Floating lever & Hunting lever system

5. Sketch & describe how ship moves forward or astern.

6. Explain how a CPP works

7. Procedure to put generators parallel.

8. Name the system that needs power supply on board

9. Sketch & describe double acting reciprocating pump

10 Sketch & describe ballasting and de ballasting system including stripping arrangement