**Internal 1**

 **(2M)**

1. Mention the various types of pumps used in ships
2. Mention the various types of valves used in ships
3. What is ballast?
4. What is bilge?
5. Name a few pipe fittings used in ships
6. What is a mud box
7. What is the purpose of a relief valve?
8. Material used for a pipe used in ships
9. List out some commonly used graphical symbols
10. Identify the colour code for ballast and fire
11. Draw the symbol for non return valve
12. What is air pipe
13. What is sound pipe
14. What is drain pipe
15. What is vent pipe
16. How will we prevent corrosion in a sea water line?
17. What are the advantages of butterfly valve?
18. What is Ballast in a ship? Where is it stored? How is it pumped out?
19. What is the need for expansion arrangements in piping systems?
20. Explain the differences between Ship and Offshore Piping.
21. What is a pump? What is NPSH?
22. What are the advantages of gate valve?
23. What is the need to provide mud boxes in a bilge line?
24. Mention the various types of pressure tests done on board.
25. How will you de-ballast your tank if your main ballast pumps fail?
26. What is meant by Pump?
27. Mention main components of Centrifugal pump.
28. What is meant by Priming?
29. Define Manometric head.
30. Define Mechanical efficiency.
31. Define overall efficiency.
32. Define speed ratio, flow ratio.
33. Mention main components of Reciprocating pump.
34. What are rotary pumps?
35. Name the various losses in pumping of fluid
36. What is the ASME code followed for design of piping systems in Process pipings (Refineries & Chemical Industries)?
37. What is the difference between stub in and stub on branches? Describe with sketch. Which one is preferred?

  

1. What is the difference between Pipe and Tube?
2. From which size onwards NB of pipe is equal to OD of Pipe?
3. Normally where do we use the following?

 i. Eccentric reducers ii)Concentric reducers

1. What do you mean by Cavitation in Pump?
2. What do you mean by NPSH? How do you calculate it?
3. What is the ASTM code for the following?

i. CS pipe ii) CS fittings iii)CS flanges iv)AS pipe P5/P11 v)Cast CS Valves

1. What is the ANSI/ASME dimensional standard for steel flanges & fittings?
2. From which side of pipe will you take a branch connection?
3. Which standard and codes will you refer while designing the piping?
4. What are the essential data required for the preparation of equipment layout?
5. What are the various statutory requirements to be considered during layout?
6. What do you mean by Composite Flange?
7. What do you mean by Insulated Joint?
8. What are Insulating Gasket Kits?
9. What do you mean by Jacketed Piping?
10. What is the min. distance to be maintained between two welds in a pipe
11. What are the different hardness tests carried out?

 **(4M)**

1. Explain the purpose of a centrifugal pump with a neat sketch
2. Explain the purpose of a displacement pump with a neat sketch
3. Explain the purpose of a axial flow pump with a neat sketch
4. Calculate the bilge main diameter for a cargo ship of 100m, Breadth 20m and Depth 10m.
5. Calculate the bilge main diameter for a tanker of 100m, Breadth 20m and Depth 10m and engine room length of 10m.
6. What are the different piping systems in a ship
7. Draw the schematic for sea water cooling system
8. Draw the schematic for lubricating oil system
9. Draw the schematic for fresh water system
10. Explain any 3 types of valves with neat sketches
11. Write short notes on colour coding
12. What are the plans submitted for piping arrangements for classification society approval. Explain the same.
13. Explain briefly about the importance of air pipes and the material used
14. Explain briefly about the importance of sounding pipes and the material used
15. What are the surveys conducted as per classification society
16. Explain how the pipes are classified as per classification societies (based on temperature and pressure)
17. What are materials used for pipe design at various locations.
18. Mention the color coding for the following
	* 1. Fresh Water
		2. Sea Water
		3. Fuel Oil
		4. Lub Oil
19. Sketch the graphical representation for the following components
20. Non-Return valve
21. Relief Valve
22. Pump
23. Quick Closing Valve
24. Calculate the Bilge Main Diameter for a cargo ship with Length 200m, Breadth 40m and Depth 15m.
25. Write short note on Air and Sounding pipes.
26. Explain the function of a butterfly valve with a neat sketch.
27. Write a short note on draining arrangements provided on board.
28. Write a short note on piping in an offshore platform.
29. What are risers? What material is used?
30. What is the need for a class survey? Explain the various plans submitted.
31. Write a short note on hydraulic testing done on board.
32. Mention the color coding for the following
	* 1. Fire Line
		2. Sea Water
		3. Dirty Water
		4. Air
33. Write short note on venting arrangements provided in piping systems.
34. Explain the function of a gate valve with a neat sketch.
35. Write a short note on scupper arrangements provided.
36. State the differences between ships and offshore piping.
37. What is the difference between a drill ship and a FPSO in terms of the piping associated with them
38. Explain Hydrotest. How much should be the pressure for Hydro-Test?
39. What is Reynold’s number and what is the value of Reynold’s number upto which the flow is laminar?
40. What are the steps involved in stress analysis (or any stress package carries out)?
41. What are the different types of stresses that may get generated within pipe during normal operation?
42. Mention some of Primary Loads (Have their origin in force)
43. Mention some of secondary Loads (Have origin in displacement)
44. What is the failure theory subscribed under ASME B31.3?
45. How do you calculate the stress developed due to thermal expansion?
46. Which is the Criteria for Pipe Supporting?
47. What is the difference between Variable Spring Hanger and Constant Spring Hanger?
48. Differentiate between static load and dynamic load.
49. Give different types of dynamic loads with example
50. 25 How to get the Foundation Loads?

**(14M)**

1. Explain a ballast system and the arrangement. Draw a schematic diagram clearly showing the suction and discharge points.
2. Explain a bilge system and the arrangement. Draw a schematic diagram clearly showing the suction and discharge points.
3. Explain a fuel oil system and the arrangement. Draw a schematic diagram clearly showing the suction and discharge points.
4. What is a pump? Mention the losses involved in a pumping system. Explain with a neat sketch.
5. Explain and draw the schematic diagram for fuel oil system
6. Write short notes on filling and overflow pipes describing their importance, material, location, corrosion and survey
7. Describe hydraulic test procedure and the precautions to be taken
8. Explain the purpose of classification society in pipe design
9. What is fire endurance test?
10. Write short notes on pipe dimensions (pipe diameter to pipe thickness relation with respect to the type of fluid flowing)
11. What are the different leak tests performed on ship’s piping
12. Describe hydraulic test procedure and the precautions to be taken
13. Write in detail about the materials used in marine piping. Mention the places where each material is used. Explain advantages and disadvantages of the same.
14. Explain the hydraulic Test procedure and the precautions to be taken. What is the need for pressure test in a piping system?
15. Mention the types of pumps used in marine use. Explain each of them in detail.
16. Sketch and Explain a Lubricating-Oil System used on board for a Marine diesel Engine.
17. What are loses associated in a pumping system? Explain the calculations necessary to calculate the total head in a system.
18. Mention the types of valves used on board and explain any three in detail. Also mention the places where each of them is used and why?