Piping Engineering, NAOE405

Question Bank

Part A (2 marks)

1. What is meant by Pump?

 2. Mention main components of Centrifugal pump.

3. What is meant by Priming?

4. Define Manometric head.

5. Define Mechanical efficiency.

7. Define overall efficiency.

9. Define speed ratio, flow ratio.

10. Mention main components of Reciprocating pump.

11. Define Slip of reciprocating pump. When the negative slip does occur?

12. What is indicator diagram?

13. What is meant by Cavitations

14. What are rotary pumps?

15. Name the various losses in pumping of fluid

16. What are characteristic curves for hydraulic pump?

17. What is the ASME code followed for design of piping systems in Process

 pipings (Refineries & Chemical Industries)?

18. What is the difference between stub in and stub on branches? Describe with

 sketch.Which one is preferred?

  

19. What is the difference between Pipe and Tube?

20. From which size onwards NB of pipe is equal to OD of Pipe?

21. What should be the radius of long radius elbow?

22 Normally where do we use the following?

 i. Eccentric reducers ii)Concentric reducers

23 What do you mean by Cavitation in Pump?

24 What do you mean by NPSH? How do you calculate it?

25 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

26 What is the thumb rule to calculate spanner size for given bolt?

27 What is the thumb rule to calculate Current required for Welding?

28 What is steam tracing? How do we decide the location of SSM & CRM.

29 Which piping items will you drop down before conducting Flushing and

Hydrotest?

30 Which piping items will you drop down before conducting Flushing and

Hydrotest?

31 Why do we provide a Dampner in the Piping of Reciprocating Pump?

32 Which parameters will u check during checking Piping Isometrics?

33 What is the ANSI/ASME dimensional standard for steel flanges & fittings?

34 What do you mean by AARH (Flange Finish)?

35 Which are the different types of Gaskets?

36 What should be the relative hardness between the RTJ gasket and flange

groove

37 From which side of pipe will you take a branch connection?

38. Which standard and codes will you refer while designing the piping?

39. What do you mean by IBR and Which lines comes under IBR purview?

40. What are the essential data required for the preparation of equipment layout?

41. What are the various statutory requirements to be considered during layout?

42. What do you mean by Composite Flange?

43. What do you mean by Insulated Joint?

44. What do you mean by Insulated Joint?

45. What are Insulating Gasket Kits?

46. What do you mean by Jacketed Piping?

47. What is the min. distance to be maintained between two welds in a pipe

48. What are the different hardness tests carried out?

Part B (8 marks)

1. What is the relation between Brinell Hardness No. and Rockwell Hardness

No.?

2. How much should be the pressure for Hydro-Test?

3. What is the Code for Sour Service?

4. How do you calculate the pipe spacing?

5.How do you calculate the width of Pipe rack?

6. What is the difference between Thermostatic and Thermodynamic Steam Trap?

7. How do you calculate the width of Pipe rack?

8. What is Reynold’s number and what is the value of Reynold’s number upto

which the flow is laminar?

9. Which fluid is used in Heat Exchanger in shell side and tube side?

10. How do you carry out Estimation?

11. What are the steps involved in stress analysis (or any stress package carries

out)?

12. What are the different types of stresses that may get generated within pipe

during normal operation?

13. What are the sources of sustained loads generated in piping system?

14. Mention some of Primary Loads (Have their origin in force)

15. Mention some of secondary Loads (Have origin in displacement)

16. What is the failure theory subscribed under ASME B31.3?

17. How do you calculate the stress developed due to thermal expansion?

18 What is desired life cycle for Piping in operation?

19. Which is the Criteria for Pipe Supporting?

20. What is the basic span of supports for 2”/6”/10”/24” pipe.

21. Define a typical 6D loop supporting details (Anchor/Guide)



22. Provision of anchor / cross guide for control valve.



22. What is the difference between Variable Spring Hanger and Constant Spring

Hanger?

23. Differentiate between static load and dynamic load.

24. Give different types of dynamic loads with example

25 How to get the Foundation Loads?

Part C (16 marks)

1. Write short notes on the following (1) Cavitations in hydraulic machines their

causes, effects and remedies. (2) Type of rotary pumps.

 2. Draw a neat sketch of centrifugal pump and explain the working principle of

the centrifugal pump. 3. Draw a neat sketch of Reciprocating pump and explain the working principle of

 single acing and double acting Reciprocating pump.

8 What is fluid hammer and how it is generated?

Q's from Revathi Madam

**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

**(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. Explain any 3 types of valves with neat sketches

**(5M)**

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. What is a pump? Mention the losses involved in a pumping system. Explain with a neat sketch.

**Internal 2**

1. List out some commonly used graphical symbols
2. Write short notes on colour coding
3. What are the plans submitted for piping arrangements for classification society approval
4. Explain and draw the schematic diagram for fuel oil system
5. Explain briefly about the importance of air pipes and the material used
6. Explain briefly about the importance of sounding pipes and the material used
7. What are the surveys conducted as per classification society
8. Write short notes on filling and overflow pipes describing their importance, material, location, corrosion and survey.
9. Explain the purpose of classification society in pipe design
10. Explain how the pipes are classified as per classification societies (based on temperature and pressure)
11. What are materials used for pipe design at various locations.
12. What is fire endurance test?
13. Write short notes on pipe dimensions (pipe diameter to pipe thickness relation with respect to the type of fluid flowing)
14. What are the different leak tests performed on ship’s piping
15. Describe hydraulic test procedure and the precautions to be taken