32043 – FLUID MECHANICS & FLUID POWER

1. PROPERTIES OF FLUIDS AND PRESSURE MEASUREMENTS

Part – A & Part - B

1. Define fluid mechanics?
2. What is pressure head?
3. Define Newtonian fluid?
4. Write classification of fluids?
5. List out properties of fluids?
6. Define specific weight?
7. Define specific gravity?
8. What is surface tension?
9. What is real fluid?
10. Define viscosity?
11. Define capillarity?
12. What is vacuum pressure?
13. State pascal's law?
14. Write two application of pascal's law?
15. What is absolute pressure?
16. What is difference between ideal and real fluids?
17. Differentiate gauge pressure & vacuum pressure?
18. What is the effect of low viscosity of fluid used in hydraulic system?
19. Write types of mechanical pressure gauges?
20. What is adhesion and cohesion?

Part –C

1. Explain construction and working of hydraulic press with neat sketch?
2. Explain construction and working of hydraulic jack with neat sketch?
3. Explain construction and working of bourdon type pressure gauge?
4. Explain about properties of fluids?
5. Write types of manometers and explain any two types?
6. Explain construction and working of diaphragm pressure gauge?
7. Explain construction and working of dead weight pressure gauge?
8. A differential manometer connected to two points A & B in a pipe line carrying oil of density 0.85 shows a difference of mercury level as 100mm in the manometer. Find the pressure difference between points A&B in meter of water with unit KN/m^2.

2. FLOW OF FLUIDS AND FLOW THROUGH PIPES

Part – A & Part - B

1. Define uniform flow?
2. Define steady flow?
3. Define laminar flow?
4. Define turbulent flow?
5. Define path line?
6. What is equation of continuity?
7. What is rate of discharge?
8. State bernoulli's theorem?
9. Write any two assumptions in bernoulli's theorem?
10. Name application of bernoullis theorem?
11. Define pitot tube?
12. What is co efficient of velocity?
13. Name types of orifice?
14. Define chezy's formula?
15. What is wetted perimeter with respect of flow?
16. What is hydraulic mean depth?
17. What is hydraulic gradient line?
18. What is co efficient of discharge?
19. Name types orifice?

Part –C

1. Derive Bernoulli's equation for a steady and incompressible flow of a fluids and stating assumptions?
2. Derive an expression to measure the discharge through an orifice meter?
3. Explain method of determining co efficient of contraction?
4. Explain experimental method of determining co efficient of velocity?
5. Derive chezy's formula for loss of head due to friction in a pipe?
6. Compare venturimeter and orifice meter?
7. Two reservoirs are connected by a pipe line of length 500mm and strikes a series of vanes moving with a velocity of 10 m/s . find (1) force exerted by the jet (2) work done by /seconds (3) efficiency of jet?
8. Using chezy's formula find head loss due to friction in a pipe of 80 mm diameter and 35 m length velocity of flow is 2 m/s?

3. IMPACT OF JETS, HYDRAULIC TURBINES CENTRIFUGAL AND RECIPROCATING PUMPS

Part – A & Part – B

1. What is meant by impact of jet?
2. What is meant impulse turbine?
3. What is reaction turbine?
4. What is meant by draft tube?
5. Define air vessel and write its function?
6. What is the function of surge tanks?
7. What is priming?
8. What is cavitation?
9. Define slip in reciprocating pump?
10. Define negative slip?
11. What is coefficient of discharge in reciprocating?
12. How turbines are classified?
13. Write difference between impulse and reaction turbine?
14. Write difference between plunger and piston pumps?
15. Write short notes about discharge of reciprocating pump?
16. Write short notes about head pump?
17. Differentiate francis and Kaplan turbine?
18. Write short note on loss of head due to sudden contraction?
19. What is slip?
20. A jet of water 50mm diameter is discharging under a constant head of 70m .find force exerted by jet on stationary plate C_v=0.9?

Part – C

1. Explain about pelton wheel with sketch?
2. Explain about francis turbine with neat sketch?
3. Explain about Kaplan turbine with neat sketch?
4. A single acting reciprocating pump having cylinder diameter of 150 mm and stroke of 300mm is required to raise water through a height of 20m . the crank rotates at 60 rpm and discharge is 5 lps. Find 1) theoretical discharge 2)percentage slip of pump 3) theoretical power required to drive pump?
5. Explain about governing of pelton wheel?
6. Explain about construction and operation of jet pump?
7. Explain about construction and operation of impulse turbine?
8. Explain about single stage centrifugal pump?
9. Explain about multistage centrifugal pump?
10. Explain about single acting reciprocating pump?
11. Explain about double acting reciprocating pump?

4. PNEUMATIC SYSTEMS

Part – A & Part – B

1. What is pneumatic system?
2. What is application of pneumatic system?
3. Write function of direction control valve?
4. Write function of check valve?
5. Write function quick exhaust valve?
6. Draw symbol of FRL unit and 4/2 DCV & 3/2 DCV?
7. What is pressure relief valve?
8. Write function of regulator in FRL?
9. Draw symbol of air filter ,check valve , air compressor?
10. Write advantages of pneumatic system?
11. What is lubricator?
12. What are Flow control valve?
13. What are FRL unit?
14. Write Basic operation of single acting cylinder?
15. Write operation of shuttle valve?
16. Write function of pressure regulator with diagram?
17. Explain about spring loaded pressure relief valve with neat sketch?

Part – C

1. Explain elements of pneumatic system with neat sketch?
2. Explain about construction and working of FRL unit?
3. Explain about construction and working quick exhaust valve is used in pneumatic circuit?
4. Explain about meter in circuit of double acting cylinder?
5. Explain about construction and working lubricator unit?
6. Explain about construction and working shuttle valve in pneumatic circuit?
7. Write types of DCV and explain any one types?

5. HYDRAULIC SYSTEM

Part – A & Part - B

1. What is hydraulic system?
2. What is viscosity index?
3. Write merits of hydraulic system?
4. Write function of accumulator?
5. What is use of pressure intensifier?
6. Draw symbol of relief valve , sequence valve, 4/3 DCV?
7. Write types of accumulator?
8. What is effect of additives used in hydraulic fluids?
9. When 4/3 DCV is used in hydraulic system?
10. What is meter in control?
11. What are functions of hydraulic actuator?
12. Name basic types of hydraulic motors?
13. What are properties of hydraulic fluid?
14. What are application of hydraulic system?
15. Define emulsibility?
16. List out elements of hydraulic system?
17. Write short notes of sequence valve?
18. Write short note of flow control valve?
19. List out elements of hydraulic system?

Part – C

1. Explain elements of hydraulic system?
2. Explain types of accumulators?
3. Explain about construction and working of gear pump?
4. Explain about construction and working of radial pump?
5. Explain hydraulic circuit used for movement of a surface grinding machine?
6. Explain various essential qualities of good hydraulic fluid?
7. Explain single and double acting cylinder?
8. Explain about hydraulic circuit for a shaping machine?
9. Explain about construction and working pressure reducing valve?