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- (x) Identify the nature of a Reciprocating pump.
- a) Negative displacement pump.
 - b) Positive displacement pump.
 - c) Diaphragm pump.
 - d) Emulsion pump.
- (xi) Establish the appropriate relation related to the intensity of pressure at any point, which is
- a) directly proportional to the area of the vessel containing liquid.
 - b) directly proportional to the depth of liquid from the surface.
 - c) directly proportional to the length of the vessel containing liquid.
 - d) inversely proportional to the depth of liquid from the surface.
- (xii) Compute the pressure at a point 4 m below the free surface of water.
- a) 19.24 kPa.
 - b) 29.24 kPa.
 - c) 39.24 kPa.
 - d) 49.24 kPa.
- (xiii) Indicate the pressure which is measured with reference to atmospheric pressure.
- a) Atmospheric pressure.
 - b) Gauge pressure.
 - c) Absolute pressure.
 - d) Mean pressure.
- (xiv) Interpret the formula of absolute pressure.
- a) Gauge pressure + atmospheric pressure.
 - b) Gauge pressure - atmospheric pressure.
 - c) Atmospheric pressure - gauge pressure.
 - d) Gauge pressure - vacuum pressure.
- (xv) Reciprocating pumps are also identified as _____
- a) force pumps.
 - b) mass pumps.
 - c) heat pumps.
 - d) speed pumps.

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Establish the terminology potential head, velocity head and datum head from Bernoulli's Theory. (3)
3. Distinguish between: uniform flow and non-uniform flow. (3)
4. Distinguish between: incompressible and compressible flow. (3)
5. State and explain the Pascal's law of hydrostatics. (3)
6. Criticize the phenomena, 'Priming is essential for centrifugal pump'. (3)

OR

- Distinguish between hydraulic efficiency, mechanical efficiency and overall efficiency for a hydraulic turbine. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. A differential U-tube mercury manometer is used to measure the pressure difference between points 1 and 2 in a pipeline conveying water. The point 1 is 0.5 m lower than point 2. The difference in level of manometric fluid on two limbs is 0.8 m. Estimate the pressure difference between point 1 and 2. Assume density of mercury as 13600 kg/m^3 and density of water as 1000 kg/m^3 . (5)
8. Explain meaning of term NPSH with respect to centrifugal pump. (5)
9. Compare the velocity profiles for laminar and turbulent flow in pipes and comment on them. (5)
10. Choose slip, percentage slip and coefficient of slip of a reciprocating pump. (5)
11. Illustrate the working principal of various single column manometer with net sketch. (5)
12. Explain the important characteristics of turbulent flow and laminar flow. (5)

OR

Deduce an expression for Darcy - Welsbach formula to determine the head loss due to friction. (5)

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