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4th Sem. / Mech.Engg. / 3rd Sem/(Prod.) 3rd Sem (T&D)

Subject : Hydraulic and Hydraulic Machines

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1
- Define specific gravity.
 - What is viscosity?
 - Define vacuum pressure.
 - Define Manometers.
 - What is the materials of Bourdon Tubes.
 - What is laminar flow of fluid?
 - Define discharge.
 - Define potential head of liquid.
 - What are types of pipe flow?
 - Give formula for hydraulic mean depth.
 - What is loss of head due to friction?
 - Define orifice.

- What is co-efficient of discharge through an orifice? HSBTEonline.com

- Define vena-contracta.
- what is hydraulic press?
- What is the use of hydraulic jack?
- Give the classification of turbines on the basis of head at the inlet.
- Define delivery head of centrifugal pump.

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SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- What is fluid? How the fluids are classified?
 - Explain surface tension briefly. What is its units?
 - Explain working of dead weight pressure gauge.
 - What is hydraulic energy? Give its types.
 - What is the difference between uniform

flow and non-uniform flow of fluids?

- vi) What are the main applications of Bernoulli's equation?
- vii) Write Darcy-Weisbach formula used for calculation of head loss due to friction.
- viii) Write a short note on flow through an orifice.
- ix) How the loss of head in an orifice is calculated? Give the expression for it.
- x) Explain the working of hydraulic brakes.
- xi) Write a short note on hydraulic lift.
- xii) What is the difference between reaction turbine and impulse turbine?
- xiii) What is priming? Why it is necessary?
- xiv) Write a short note on vane pump.
- xv) What is a centrifugal pump? Give its specifications.

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SECTION-C

Note: Long answer type questions. Attempt any three questions.

3x10=30

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- Q.3 Explain the principle and working of U tube differential manometer with diagram.
- Q.4 State and prove Bernoulli's theorem.
- Q.5 A crude oil of kinematic viscosity 0.4 stoke is flowing through a pipe of diameter 30 cm at the rate of 3000 litres per second. Find the head lost due to friction for a length of 50 m of the pipe.
- Q.6 Explain with neat sketch of function, main components and working of differential hydraulic accumulator.
- Q.7 Explain the main parts and working of Pelton wheel turbine with diagram.

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