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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**B.Tech II Year I Semester Supplementary Examinations July-2022****FLUID MECHANICS & HYDRAULIC MACHINERY**

(Common to ME & AGE)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I**1** Define Manometer. Briefly explain the types of Manometers in detail? **L2 12M****OR****2 a** Define Hydro static law and derive the condition for pressure head. **L2 6M****b** Derive the condition for capillary rise and capillary fall with neat sketch. **L1 6M****UNIT-II****3 a** What is Euler's equation of motion? How do you obtain Bernoulli's equation from it? Name the different forces present in a fluid flow. **L4 6M****b** State Bernoulli's theorem for steady flow of an incompressible fluid. Derive the expression for Bernoulli's theorem from first principle and state the assumption made for such a derivation. **L5 6M****OR****4 a** Define hydraulic gradient line and total energy line. **L2 6M****b** Explain briefly the analysis of free liquid jets. **L4 6M****UNIT-III****5 a** Derive the expression for flow through pipes in series. **L1 6M****b** Derive the expression for flow through parallel pipes. **L1 6M****OR****6** An external cylindrical mouth piece of diameter 150 mm is discharging water under a constant head of 6 m. Determine the discharge and absolute pressure head of water at vena – contracta. Take $C_d=0.855$ and C_c for vena contracta = 0.62 and atmospheric pressure head = 10.3 of water. **L1 12M****UNIT-IV****7** What is similitude and describe the types of similarities **L4 12M****OR****8** Describe briefly Buckingham's pi- theorem. **L4 12M****UNIT-V****9** Describe briefly definitions of heads and efficiencies of a turbine **L4 12M****OR****10** Describe briefly the following: **L3 12M**

i) pumps in series ii) pumps in parallel

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