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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations November-2020

THERMAL AND FLUID ENGINEERING

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

1 Draw the neat sketch of thermal power plant and explain coal storage system. 12M

OR

2 Explain the different types of hydroelectric power stations 12M

UNIT-II

3 a Define and explain Zeroth Law of Thermodynamics. 6M

b What is heat transfer? What are its positive and negative directions? 6M

OR

4 a State first law of thermodynamics. Prove that internal energy is a property of the system. 6M

b Establish the equivalence of Kelvin-Planck and Clausius statements. 6M

UNIT-III

5 a Describe the different operations of Rankine cycle. Derive also the expression for its efficiency. 6M

b A steam power plant works between 40 bar and 0.05 bar. If the steam supplied is dry saturated and the cycle of operation is Rankine, Find: 6M

(i) cycle efficiency,

(ii) Specific steam consumption.

OR

6 a Draw the P-V and T-S diagrams of Carnot cycle. 6M

b Find the change in enthalpy and entropy of steam, initial pressure 10 bar and 0.98 then it will reach 20 bar and 35⁰ temperature. 6M

UNIT-IV

7 a Explain the terms: (i) Path line (ii) Streak line (iii) Stream line. 6M

b What is a manometer? How are they classified? 6M

OR

8 a Explain any three types of fluid flows. 6M

b If 5 m³ of certain oil weighs 50 kN, calculate specific weight, density and specific gravity of oil. 6M

UNIT-V

9 a Derive Darcy Weisbach equation. 6M

b What are minor losses? Under what circumstances they are negligible. 6M

OR

10 a What is a pitot-tube? How will you determine the velocity at any point with the help of pitot-tube? 6M

b What is a orifice meter? Derive an expression for the discharge through a orifice meter. 6M

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