

**Reg. No:**

**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  $35^{\circ}$  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  $5 \text{ m}^3$  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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