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

B.Tech I Year I Semester Supplementary Examinations Feb-2021

THERMAL & FLUID ENGINEERING

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 60

PART-A

(Answer all the Questions 5 x 2 = 10 Marks)

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|---|---|---|----|
| 1 | a | Define Thermal Power. | 2M |
| | b | Define System. | 2M |
| | c | Define Dryness Fraction. | 2M |
| | d | What are the assumptions of Bernoulli's Equation? | 2M |
| | e | Explain pipes in parallel and series. | 2M |

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

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|---|---|-----|
| 2 | Differentiate between the boiler and condenser. | 10M |
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OR

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| 3 | Explain the factor to be considered for selection of site for steam power plant. | 10M |
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UNIT-II

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|---|---|--|----|
| 4 | a | Define property. Distinguish between intensive and extensive property. | 5M |
| | b | What do you understand by path function and point function | 5M |

OR

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| 5 | a | What are the limitations of the First law of Thermodynamics | 5M |
| | b | Establish the equivalence of Kelvin-Planck and Clausius statement | 5M |

UNIT-III

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|---|---|--|----|
| 6 | a | 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 (i) cycle efficiency, (ii) Specific steam consumption. | 5M |
| | b | Explain the various operation of a Carnot cycle. Also represent it on T-S and P-V diagrams. | 5M |

OR

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|---|---|--|----|
| 7 | a | Comparison between Rankine cycle and Carnot cycle. | 6M |
| | b | Give the Comparison between fire tube and water tube Boiler. | 4M |

UNIT-IV

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| 8 | a | Define the equation of continuity. Obtain an express for continuity equation for a one-dimensional flow. | 6M |
| | b | pipe 300 m. long has a slope of 1 in 100 and tapers from 1.2 m diameter at the high end to 0.6 m diameter at the low end. The rate of flow of water through the pipe is 0.10 m ³ /sec. If the pressure at the high end is 73.575 kPa, find the pressure at the low end. Neglect losses. | 4M |

OR

- 9 a Water is flowing through a pipe having diameters 30 cm and 15 cm at the bottom and upper end respectively. The intensity of pressure at the bottom end is 29.43 N/cm² and the pressure at the upper end is 14.715 N/cm². Determine the difference in datum head if the rate of flow through pipe is 50 lit/s. **5M**
- b Explain the types of fluid flows. **5M**

UNIT-V

- 10 a Horizontal pipe carries water at rate of 0.04m³/s. its diameter is 300mm reduced to 150mm. calculate the pressure loss across contraction. Take co-efficient of contraction as 0.62. **5M**
- b What is a venturimeter? Derive an expression for the discharge through a venturimeter. **5M**

OR

- 11 a What are minor losses? Under what circumstances they are negligible. **5M**
- b Derive equation for loss of head due to sudden enlargement. **5M**

END