R18

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

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

1	a	Boiler	**2M**
	b	Process	**2M**
	c	Enthalpy of super-heated steam	**2M**
	d	Define Viscosity.	**2M**
	e	What is meant by hydraulic gradient line?	**2M**

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

UNIT-I

2	What is need of Chimney in thermal power plant and their types?	**10M**

OR

3	Explain the factor to be considered for selection of site for hydro electric power plant.	**10M**

UNIT-II

4	a	Differentiate between the cyclic process and non-cyclic process.	**5M**
	b	What is heat transfer? What are its positive and negative directions.	**5M**

OR

5	a	Derive an expression for the availability of an open system.	**5M**
	b	State and explain second law of thermodynamics.	**5M**

UNIT-III

6	a	Explain Limitations of Carnot cycle.	**5M**
	b	Describe the different operations of Rankine cycle. Derive also the expression for its efficiency.	**5M**

OR

7	a	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**
	b	How are boilers classified.	**4M**

UNIT-IV

8	a	Explain the terms: (i) Path line (ii) Streak line (iii) Stream line, and (iv) Stream tube.	**6M**
	b	An oil film of thickness 1.5 mm is used for lubrication between a square plate of siz 0.9 m and an inclined plane having an angle of inclination 200. The weight of the sq is 392.4 N and it slides down the plane with a uniform velocity of 0.2 m/s. Find the viscosity of the oil.	**4M**

OR

9	a	What is a manometer? How are they classified? Explain with sketches.	**5M**
	b	What is Euler's equation of motion? How will you obtain Bernoulli's equation from it?	**5M**

UNIT-V

10 **a** Derive equation for loss of head due to sudden enlargement. **5M**

b What are minor losses? Under what circumstances they are negligible. **5M**

OR

11 **a** What is a pitot-tube? How will you determine the velocity at any point with the help of pitot-tube? **5M**

b A 30cm x 15cm venturimeter is inserted in a vertical pipe carrying water, flowing in the upward direction. A differential mercury-manometer connected to the inlet and throat gives a reading of 30 cm. Find the discharge. Take C = 0.98 **5M**

END