Q.P. Code: 19ME0361 **R19**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

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

THERMAL AND FLUID ENGINEERING

(Electrical and Electronics Engineering)

Note: **Use of Steam table is permitted.**

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	a	Explain the various elements of hydroelectric power station with a neat sketch	**6M**
	b	Explain the factors to be considered for selection of site for hydroelectric power plant.	**6M**

OR

2	a	Explain the different types of hydroelectric power stations	**8M**
	b	What is need of Chimney in thermal power plant.	**4M**

UNIT-II

3	a	Distinguish between closed, open, isolated systems. Illustrate with examples.	**6M**
	b	Define property? Distinguish between intensive and extensive property.	**6M**

OR

4	a	Derive the relation between cp & cv	**6M**
	b	Explain the following terms. State , Path , Process and System	**6M**

UNIT-III

5	a	Draw and explain the P-V, T-H diagram of pure substances.	**6M**
	b	Describe different operations of Rankine cycle. Derive also the expression for its efficiency.	**6M**

OR

6	a	A steam power plant is supplied with dry saturated steam at a pressure of 10 bar and exhausts into a condenser at 0.2 bar, Calculate the Rankine efficiency by using steam tables.	**6M**
	b	Explain the following terms . sensible , latent heat and dryness fraction.	**6M**

UNIT-IV

7	a	A U tube manometer is used to measure the pressure of oil of specific gravity 0.85 flowing in a pipe line. Its left end is connected to the pipe and the right limb is open to the atmosphere. The centre of the pipe is 100 mm below the mercury in the right limb. If the difference of mercury level in the two limbs is 160 mm. Determine the absolute pressure of the oil in the pipe.	**8M**
	b	Explain how a U tube manometer is used to measure both positive and negative pressures.	**4M**

OR

8	**a**	A 30 cm diameter pipe conveying water, branches into two pipes of diameters 20 cm and 15 cm respectively. If the average velocity in the 30 cm diameter pipe is 2.5 m/s, find the discharge in this pipe. Also determine the velocity in 15 cm pipe if the average velocity in 20 cm diameter pipe is 2 m/s.	**8M**
	b	Explain the types of fluid flows. Explain any four.	**4M**

UNIT-V

9	**a**	Derive Darcy Weisbach equation	**6M**
	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.	**6M**

OR

10	**a**	Derive equation for loss of head due to sudden enlargement.	**6M**
	b	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.	**6M**

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