Code No: P18MET12

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)
III B.TECH I SEMESTER END REGULAR EXAMINATIONS, DEC/JAN – 2022/23
THERMAL ENGINEERING-II
(ME Branch)

Time: 3 hours Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answer all the questions in Part-A (5X2=10M)

Q.No.		Questions	Marks	CO	KL
1.	a)	Give broader classification of boilers.	[2M]	1	2
	b)	What are the functions of a nozzle?	[2M]	2	1
	c)	List methods of reducing the speed of the rotor of a steam turbine.	[2M]	3	1
	d)	What happens if a steam condenser is not there in a power plant?	[2M]	4	1
	e)	What is the difference between jet and rocket engines?	[2M]	5	1

PART-B

Answer One Question from each UNIT (5X10=50M)

Q.No.		Questions	Marks	CO	KL
		UNIT-I			
2.	a)	Describe with a neat diagram, the construction and working of a Babcock and Wilcox water tube boiler?	[5M]	1	3
	b)	Differentiate between fire tube and water tube boilers.	[5M]	1	2
		OR			
3.		What do you mean by draught? Explain the role of chimney in creating draught. Derive an expression for the height of the chimney.	[10M]	1	4
		UNIT-II4			
4.		What is the purpose of a nozzle? Write a short notes about different types of nozzles. Derive an expression for the exit velocity of steam from the nozzle.	[10M]	2	4
		OR			
5.		Discuss about the supersaturated flow of steam through a nozzle and the significance of Wilson's line. State the effects of super saturation in a steam nozzle.	[10M]	2	3
		UNIT-III			
6.		Explain in detail the calculation of power output from the construction of combined velocity diagram for an impulse turbine.	[10M]	3	2
		OR			
7.		Derive the equation of condition of maximum efficiency of an Impulse turbine?	[10M]	3	4
		UNIT-IV			
8.	a)	Describe the constructional features and working of evaporative condenser with a neat sketch.	[5M]	4	2
	b)	Derive an expression for the estimation of cooling water required in a condenser.	[5M]	4	4
		OR			
9.	a)	Derive an expression for the efficiency of Brayton cycle	[5M]	4	4

	b)	With the help of schematic and T-S diagrams, explain the closed cycle gas turbine with reheating process.	[5M]	4	4
		UNIT-V			
10.	a)	Write about pulse jet engine with appropriate diagrams.	[5M]	5	2
	b)	Differentiate between jet and rocket engines.	[5M]	5	2
		OR			
11.	a)	What are requirements of solid propellants? With the help of a neat diagram, explain the principle of solid propulsion rocket?	[5M]	5	2
	b)	Write about merits and limitations of liquid propelletnts.	[5M]	5	2

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