Code No: P18MET12

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)
III B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, MARCH/APRIL – 2023
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)	What is the purpose of a boiler?	[2M]	1	
	b)	List functions of a nozzle.	[2M]	2	
	c)	Differentiate between impulse and reaction turbine.	[2M]	3	
	d)	What are the requirements of a steam condenser?	[2M]	4	
	e)	Classify jet engines.	[2M]	5	

PART-B

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

Q.No.		Questions	Marks	CO	KL
		UNIT-I			
2.		Describe with a neat diagram, the construction and working of a Babcock and Wilcox water tube boiler?	[10M]	1	
		OR			
3.		Write short notes on the following: a) boiler horsepower, b) equivalent efficiency, c) Efficiency and d) heat balance.	[10M]	1	
		UNIT-II			
4.		What is the purpose of a steam nozzle. Explain the different types of nozzles. Derive the equation of exit velocity of steam nozzle.	[10M]	2	
		OR			
5.		Explain 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	
		UNIT-III			
6.	a)	Discuss different methods to reduce rotor speed in steam turbines.	[5M]	3	
	b)	Derive an expression for the condition for maximum efficiency of reaction turbines.	[5M]	3	
		OR			
7.		Derive an expression for condition for maximum efficiency of a steam turbine with the help of combined velocity diagram.	[10M]	3	
		UNIT-IV			
8.	a)	Explain the working of high-level jet condenser with the help of a neat sketch and discuss its applications?	[5M]	4	
	b)	Write about Air pump, Explain Edward's air pump with neat sketch?	[5M]	4	
		OR			

9.	a)	Derive the efficiency equation of Brayton cycle. State the used of gas turbine.	[5M]	4	
	b)	Explain the closed cycle gas turbine with reheating process with the help of line sketch and T-s diagram.	[5M]	4	
		UNIT-V			
10.	a)	Write about turbo jet engines.	[5M]	5	
	b)	With the help of schematic and T-S diagrams explain the working of jet engines.	[5M]	5	
		OR			
11.		With the help of a neat diagram, explain the working principle of solid propulsion rocket. Where is it used? What are the requirements of solid propellants?	[10M]	5	

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