

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VIII (New) EXAMINATION – WINTER 2019

Subject Code: 2181928
Date: 29/11/2019
Subject Name: Steam and Gas Turbines
Time: 02:30 PM TO 05:00 PM
Total Marks: 70
Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of steam table is permitted.

		MARKS
Q.1	(a) Give advantages and limitations of gas turbine power plant.	03
	(b) What do you understand by compounding of steam turbine? List types of it.	04
	(c) Write short note on Turbojet engine.	07
Q.2	(a) Explain the Principle of jet propulsion with neat sketch.	03
	(b) Write short note on labyrinth packing.	04
	(c) Derive expression for mass flow rate through the nozzle.	07
	OR	
	(c) Draw Schematic diagram of turbo prop engine and explain its working.	07
Q.3	(a) Explain working of mixed pressure turbine.	03
	(b) State the different arrangement of combined cycle power plants	04
	(c) Make a list of improving the efficiency & specific output of simple gas turbine plant.	07
	OR	
Q.3	(a) Explain the functions of convergent portion, divergent portion and throat with reference to flow of steam.	03
	(b) Estimate the mass flow rate of steam in a nozzle with the following data: Inlet pressure and temperature = 12 bar and 200°C Back Pressure = 1 bar Throat Diameter = 10 mm	04
	(c) Explain physical significance of critical ratio.	07
Q.4	(a) What are the main types of gas turbine combustion chamber?	03
	(b) Derive an Equation of thermal efficiency of Ideal Brayton cycle.	04
	(c) Draw & Explain: Pressure-Velocity compounding system of impulse turbine.	07
	OR	
Q.4	(a) Give classification of propulsive engine.	03
	(b) Enlist different losses in steam turbine.	04
	(c) Write short note on Ram jet engine.	07
Q.5	(a) Give application of gas turbine.	03
	(b) Give detailed classification of steam turbines.	04
	(c) Describe different types of nozzle with neat sketch.	07
	OR	
Q.5	(a) Give importance of combined cycle power plant.	03

- (b) Draw p-v & T-s diagram for gas turbine cycle with: (1) Intercooler, (2) Reheating **04**
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- (c) Explain with neat sketch various method of attachment of blade to turbine rotor. **07**

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