

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2171910

Date: 05/12/2019

Subject Name: Power Plant Engineering

Time: 10:30 AM TO 01:00 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 Mollier chart and steam table is permissible.

		MARKS
Q.1	(a) Explain the present power position in India.	03
	(b) Explain constructional difference between Low pressure and High pressure boiler.	04
	(c) Explain Bowl Mill with neat sketch.	07
Q.2	(a) List requirements of a good ash handling plant.	03
	(b) Explain friction in Nozzle during steam flow.	04
	(c) Derive equation for maximum discharge through chimney.	07
	OR	
	(c) Derive equation of maximum discharge through a nozzle or critical pressure ratio.	07
Q.3	(a) Give comparison of Impulse and Reaction Turbine.	03
	(b) Explain compounding of steam turbines.	04
	(c) A nozzle expands steam from 12 bar and 250°C to 6 bar. Is the nozzle convergent or divergent? Neglecting the initial velocity, find the minimum area of the nozzles to flow 2.2 kg/s of steam under the given conditions. Assume the expansion of steam isentropic. Calculate the actual throat area if the coefficient of discharge is 0.97.	07
	OR	
Q.3	(a) Give comparison between jet and surface condenser.	03
	(b) Explain principle of Jet propulsion.	04
	(c) A single stage impulse turbine has a mean blade ring diameter of 120 cm and runs at 3500rpm. The blade speed ratio is 0.45 and discharge is axial. The nozzle angle is 16° and blade friction factor is 0.9. Determine : (i) blade angles and (ii) theoretical specific power output	07
Q.4	(a) Explain reverse osmosis process.	03
	(b) Discuss role of pH in corrosion and scale formation.	04
	(c) Explain Natural draft cooling tower with neat sketch.	07
	OR	
Q.4	(a) Give importance of combined cycle power generation	03
	(b) Explain open cycle gas turbine plant with figure.	04
	(c) Derive equation of maximum work for brayton cycle.	07
Q.5	(a) Discuss Chain Reaction in Nuclear Power plant	03
	(b) Differentiate between nuclear fusion and fission.	04
	(c) Explain with neat sketch construction and working of CANDU type reactor.	07
	OR	
Q.5	(a) Explain Demand Factor, Diversity Factor and Plant Capacity Factor.	03
	(b) Write short note on Cost of Power Plant.	04
	(c) What do you understand by the term tariff? State the various methods for calculation of tariff of them.	07
