Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2140908 **Date: 13/12/2019**

Subject Name: Electrical Power Generation

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.**

			MARKS
Q.1	**(a)**	Justify the statement, "overall efficiency of steam power station is quite low".	**03**
	(b)	For a steam power plant, explain functions of: (i) Air Pre Heater (ii) Cooling Tower (iii)ESP (iv) ID Fan (v) Super heater (vi) Condenser (vii) Economizer(viii) FD Fan	**04**
	(c)	With the help of schematic diagram explain the operation of Steam power plant.	**07**
Q.2	**(a)**	Compare conventional energy sources with non conventional energy sources	**03**
	(b)	Classify hydro power station as per the height of head and explain in brief.	**04**
	(c)	Draw and explain schematic arrangement of diesel power plant. Give advantages and disadvantages of diesel power plant	**07**
		OR	
	(c)	Explain the schematic of nuclear power station in detail with necessary diagram	**07**
Q.3	**(a)**	Write a short note on Nuclear Reactors	**03**
	(b)	Define tariff. List out different types of tariff and explain any one in brief.	**04**
	(c)	Define (i) Connected load (ii) Plant capacity factor (iii) Diversity factor (iv) Maximum load (v) Plant use factor (vi) Base load (vii) Peak load	**07**
		OR	
Q.3	**(a)**	Write short note on pyranometer	**03**
	(b)	Explain working principle of solar photovoltaic cell	**04**
	(c)	The monthly reading of consumer meter are as follow: Maximum demand = 50KW Energy consumed = 36,000KWh Reactive energy = 23,400KVAR If the tariff is Rs.80per KW of maximum demand pulse 8 paise per unit pulse 0.5 paise per unit for each 1%of power factor below 86%, calculate the monthly bill of the consumer	**07**
Q.4	**(a)**	Describe advantages and disadvantages of gas power plant	**03**
	(b)	A hydro plant has a reservoir having capacity of 5×10^8 $m^{3,}$ which supplies water at a head of 200m.If the efficiency is 70%, find the total power generated. Assume density of water is 1000kg.	**04**
	(c)	Write short note on Solar Photovoltaic (SPV) system.	**07**
		OR	
Q.4	**(a)**	Explain advantages and disadvantages of wind energy.	**03**
	(b)	Differentiate between Horizontal and Vertical Axis Wind Turbine	**04**

	(c)	Explain various components of wind energy conversion system with diagram	**07**
Q.5	**(a)**	What is energy? What are the different sources of energy?	**03**
	(b)	What is the necessary of Earthing? Explain in brief.	**04**
	(c)	Enlist various equipments used in substation & explain function of each in brief	**07**

OR

Q.5	**(a)**	What are the function of spillways and surge tank in hydro power plant.	**03**
	(b)	Write a short note on arc suppression coil earthing	**04**
	(c)	What is substation? Explain classification of substation	**07**

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