Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(New) EXAMINATION – SUMMER 2016

Subject Code:2140908 Date:03/06/2016

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		**Short Questions**	**14**
	1	Economisers are used to heat _____	1
	2	In a hydro-electric plant, spillways are used_____.	1
	3	Of all the plants, minimum quantity of fuel is required in_____ plant.	1
	4	Diesel power plants are used as_____ plants.	1
	5	Gas turbine power plant is_____ efficient than steam power plant.	1
	6	The value of demand factor is_____ than one.	1
	7	The block rate tariff is mostly applicable to_____ consumers.	1
	8	The ideal tariff for any type of consumer is_____ tariff.	1
	9	Francis and Kaplan turbines are used for_____ heads.	1
	10	What is photovoltaics (solar electricity)?	1
	11	What do you mean by wind energy conversion systems?	1
	12	When single line to earth fault occurs on an ungrounded neutral system, the capacitive current in the two healthy phases rises to _____ times the normal value.	1
	13	Single bus-bar arrangement in sub-stations is used for voltages less then_____ KV.	1
	14	The neutral wire is coloured _____.	1
Q.2	**(a)**	Why is the overall efficiency of a steam power station very low?	**03**
	(b)	Explain functions of the following in relation to nuclear power station:(i) Control rod (ii) Moderator (iii) Coolant (iv) Heat exchanger	**04**
	(c)	Explain the schematic of steam power station in detail with necessary diagram.	**07**
		OR	
	(c)	Explain arc suppression coil earthing in detail.	**07**
Q.3	**(a)**	Explain the essential factors which influence the choice of site for a hydro-electric plant.	**03**
	(b)	Explain the functions of the following : (i)Dam (ii) spillways (iii) surge tank (iv) draft tube.	**04**

	(c)	Draw and explain schematic arrangement of diesel power plant. Give advantages and disadvantages of diesel power plant.	**07**

OR

Q.3	**(a)**	Discuss advantages and disadvantages of Nuclear power stations.	**03**
	(b)	What is meant by water hammering effect? How it is minimized with the help of surge tank?	**04**
	(c)	Explain the working of a closed cycle gas turbine power plant with a schematic diagram	**07**
Q.4	**(a)**	Differentiate between open and closed gas turbine cycles?	**03**
	(b)	What are the major components of wind energy conversion systems?	**04**
	(c)	Explain construction & working of solar refrigeration plant with suitable figure	**07**

OR

Q.4	**(a)**	Enlist various equipment's used in substation.	**03**
	(b)	Write different types tariff and explain three part tariff.	**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**
Q.5	**(a)**	What is Neutral Grounding? List the advantages of Neutral Grounding.	**03**
	(b)	What is a transformer sub-station? What are the different types of transformer sub-stations? Illustrate your answer with a suitable block diagram.	**04**
	(c)	Explain working principle of solar photovoltaic cell. Also Draw and explain the I-V and P-V characteristics of solar photovoltaic cell.	**07**

OR

Q.5	**(a)**	Why is neutral earthing necessary in power system? How can it be classified?	**03**
	(b)	Differentiate between Horizontal and Vertical Axis Wind Turbine.	**04**
	(c)	Explain construction and working of DFIG	**07**

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