Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – WINTER 2023

Subject Code:3142404 Date:17-01-2024

Subject Name: Basic Power System 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. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Briefly discuss the electric power generation stations.	**03**
	(b)	List the advantages and disadvantages of Nuclear power station.	**04**
	(c)	Draw and explain schematic diagram of Hydro power plant.	**07**
Q.2	**(a)**	Discuss skin effect and proximity effect in brief.	**03**
	(b)	List the merits and de-merits of Thermal power plant.	**04**
	(c)	Classify Sub-station. Compare indoor and outdoor substation in tabular form.	**07**
		OR	
	(c)	Discuss about bus bar arrangements in sub-station.	**07**
Q.3	**(a)**	Discuss various methods to improving string efficiency.	**03**
	(b)	Discuss about constants of a transmission line.	**04**
	(c)	Derive the equation of an inductance of a conductor and loop inductance for single-phase two wire line.	**07**
		OR	
Q.3	**(a)**	What are the needs of reactor? Briefly discuss types of reactor.	**03**
	(b)	Define Corona. List factors affecting Corona.	**04**
	(c)	Give the comparison between pin type and suspension type insulator.	**07**
Q.4	**(a)**	What is power factor? Discuss de-merits of low power factor.	**03**
	(b)	Which are the causes of low power factor? Explain advantages of power factor improvement.	**04**
	(c)	Discuss about grid. Explain its importance in power system.	**07**
		OR	
Q.4	**(a)**	Briefly discuss FACTs controllers.	**03**
	(b)	Explain power system stability.	**04**
	(c)	Derive the expression of most economical power factor.	**07**
Q.5	**(a)**	Briefly discuss types of DC links.	**03**
	(b)	Which are the application of HVDC system?	**04**
	(c)	Define grounding. Explain reactance grounding.	**07**
		OR	
Q.5	**(a)**	Briefly discuss types of cable.	**03**
	(b)	What is the requirement of neutral grounding? Also discuss its advantages.	**04**
	(c)	Explain advantages and dis-advantages of HVDC transmission system.	**07**

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