Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V(NEW) EXAMINATION – SUMMER 2022

Subject Code:3150911 Date:09/06/2022

Subject Name:Power System- II

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. **Simple and non-programmable scientific calculators are allowed.**

Q.1	**(a)**	What is p.u. system? Give the advantages of p.u. system	**03**
	(b)	Explain power in single phase AC circuits briefly	**04**
	(c)	Explain rigorous solution of long transmission line	**07**
Q.2	**(a)**	Write a short note on Ferranti effect.	**03**
	(b)	Show that symmetrical component transformation is power invariant.	**04**
	(c)	Explain working of a synchronous generator connected to infinite bus. Draw equivalent circuit and phasor diagram.	**07**
		OR	
	(c)	Derive equations of power flow through a transmission line.	**07**
Q.3	**(a)**	Explain classification of transmission lines. Define voltage regulation and efficiency of a transmission line.	**03**
	(b)	What is receiving end power circle diagram? Write down steps to draw it.	**04**
	(c)	Explain phase shift in star-delta transformer with phasor diagram.	**07**
		OR	
Q.3	**(a)**	Explain ABCD constant for medium transmission line.	**03**
	(b)	Explain salient pole synchronous generator with power angle curve in short.	**04**
	(c)	Discuss transients on a transmission line in case of a symmetrical fault.	**07**
Q.4	**(a)**	Differentiate symmetrical and unsymmetrical faults. List various unsymmetrical faults.	**03**
	(b)	Explain analysis of a line to line fault.	**04**
	(c)	Explain types of lightning strokes.	**07**
		OR	
Q.4	**(a)**	What is corona? Write formula of Disruptive critical voltage and briefly describe each variable in the formula.	**03**
	(b)	Write a short note on selection of circuit breaker.	**04**
	(c)	Derive all components of V and I for double line to ground fault on an unloaded generator with sequence network. (consider 3-phase star connected generator with ground neutral)	**07**
Q.5	**(a)**	Write a short note on radio interference.	**03**
	(b)	Explain overvoltage due to arcing ground with necessary vector diagram.	**04**
	(c)	Write a note on following: (1) Lightning Arresters (2) Surge absorber	**07**
		OR	
Q.5	**(a)**	Write a brief note on capacitance switching.	**03**

(b) Explain reflection and refraction at a T-junction for travelling wave with necessary equation. **04**

(c) Derive the equation for attenuation of travelling waves **07**

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