Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2151004 Date:15/06/2022

Subject Name:Electronics and Communication

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)**	Define Following Terms: (1) Phase Modulation (2) Modulation Index (3) Image Frequency	**03**
	(b)	State Parseval's theorem	**04**
	(c)	What is modulation? Why modulation required? Describe in detail.	**07**
Q.2	**(a)**	Draw and explain parallel tuned circuits in detail.	**03**
	(b)	Explain power spectral density and its significance in communication	**04**
	(c)	Draw and explain circuit of envelope detector for AM	**07**
		OR	
	(c)	Compare Double-sideband suppressed carrier (DSBSC) modulation with Single sideband suppressed carrier (SSBSC) modulation in detail.	**07**
Q.3	**(a)**	State and prove the following properties of Fourier transform. (1) Time shifting (2) Frequency shifting	**03**
	(b)	Explain FET balanced modulator in brief.	**04**
	(c)	Explain Carson's rule in FM? Explain Armstrong method of FM generation.	**07**
		OR	
Q.3	**(a)**	Describe briefly shot noise, partition noise and flicker noise. Why they are generated?	**03**
	(b)	Describe Vestigial Sideband (VSB) modulation technique.	**04**
	(c)	List all the basic FM demodulators. Draw and explain Foster Seeley Discriminator in detail	**07**
Q.4	**(a)**	Give comparison between AM and FM systems.	**03**
	(b)	Explain FM stereo broadcast system in brief.	**04**
	(c)	Explain the noise factor of a lossy network. Also explain noise temperature in detail.	**07**
		OR	
Q.4	**(a)**	Explain square law detector in brief.	**03**
	(b)	Explain Pre-emphasis and de-emphasis circuits	**04**
	(c)	Explain Basic slope detector and Foster Seeley discriminator in detail.	**07**
Q.5	**(a)**	Explain AM receiver in brief	**03**
	(b)	Explain tuning ranges and adjacent channel selectivity in brief.	**04**
	(c)	Explain Super-heterodyne principal and super-heterodyne receiver.	**07**
		OR	

Q.5	**(a)**	What is amateur radio? Explain in brief.	**03**
	(b)	Explain skin effect in detail.	**04**
	(c)	What is Ham radio? Discuss the importance of Ham radio during natural calamines.	**07**

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