

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 7 – EXAMINATION – SUMMER 2026

Subject Code: 2171004

Date: 05/06/2026

Subject Name: Wireless 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) Enlist and explain in brief various multiple access schemes used in wireless communication. **03**
 - (b) Explain the salient features of Bluetooth technology. **04**
 - (c) Describe GSM architecture with necessary block diagram and its various blocks in detail. **07**
- Q.2**
- (a) Briefly Describe frequency reuse concept in cellular communication. **03**
 - (b) Define the following terms regarding wireless communication: **04**
 - (i) Control channel
 - (ii) ISM bands
 - (iii) WLL
 - (iv) GOS
 - (c) Explain the advantages of CDMA over GSM system in terms of Multipath characteristics, Privacy features, Security and Quality degradation. **07**
- OR
- (c) Describe Hand-off strategies in cellular system. Compare soft and hard Handoff. **07**
- Q.3**
- (a) Explain GSM Speech Processing in brief. **03**
 - (b) Derive the basic LOS transmission loss equations from the free space propagation equations for radio environment. **04**
 - (c) Explain the working of RAKE receiver with neat diagram. **07**
- OR
- Q.3**
- (a) Define: i) Diffraction ii) Reflection iii) Cell splitting **03**
 - (b) Explain channel assignment strategies. **04**
 - (c) Explain the concept of cell sectoring and how it affects interference and system capacity. **07**
- Q.4**
- (a) Define and explain multipath fading. **03**
 - (b) What is ZigBee? Explain ZigBee networks in detail. **04**
 - (c) Explain the difference between co-channel interference and adjacent channel interference. Derive the equation for the signal to interference ratio. **07**
- OR
- Q.4**
- (a) Explain in brief on Wi Fi. **03**
 - (b) Explain the upgrade path from 2G to 3G cellular networks. **04**

	(c) Compare TDMA and CDMA multiple Access Techniques in detail.	07
Q.5	(a) Explain Diversity techniques in brief.	03
	(b) Derive the expression for Feher's upper bound.	04
	(c) What do you mean by fading? List and explain various types of small-scale fading.	07
	OR	
Q.5	(a) What do you mean by OFDM?	03
	(b) Explain the working of UWB Radio.	04
	(c) Describe the architecture of IS-95 System.	07
