

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER- VII EXAMINATION – SUMMER 2026

Subject Code:3171004

Date:03-06-2026

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.

	MARKS
Q.1 (a) Describe evolution of 1G, 2G, 3G mobile communication.	03
(b) Explain the process of call originating and call termination in GSM.	04
(c) What is soft handoff? Explain in detail RAKE receiver with neat diagram.	07
Q.2 (a) Define : Blocked call, Traffic Intensity, Grade of service.	03
(b) List and explain cellular system interferences.	04
(c) Compare and Explain with neat sketch -- 3 cell reuse system – 7 cell reuse system	07
OR	
(c) Compare and Explain with neat sketch -- Cell splitting - Cell sectoring	07
Q.3 (a) What is Huygen's principle?	03
(b) Define: Coherence Bandwidth (BW) and Coherence time. Determine Coherence BW (90%) and Coherence BW (50%) for a rms delay spread of 8.47 ns.	04
(c) List indoor propagation model. Explain any one in detail with neat sketch.	07
OR	
Q.3 (a) What is Brewster's angle?	03
(b) List Diversity techniques. Explain any one in detail	04
(c) List outdoor propagation model. Explain any one in detail with neat sketch.	07
Q.4 (a) Explain Code Division Multiple Access (CDMA) in wireless communication with figure	03
(b) If 20 MHz of total spectrum is allocated for a duplex wireless cellular system and each simplex channel has 25 kHz RF bandwidth, find: The number of duplex channels The total number of channels per cell site, if N=4 cell reuse is used.	04
(c) Explain: I-persistent CSMA, non-persistent CSMA, p-persistent CSMA.	07
OR	
Q.4 (a) Explain Frequency Division Multiple Access(FDMA) in wireless communication with figure	03
(b) If GSM uses a frame structure where each frame consists of 8 time slots and each time slot contains 156.25 bits and data is transmitted at 270.833 kbps in the channel find :(i) The time duration of a bit. (ii) The time duration of a slot. (iii)The time duration of a frame. (iv)How long must a user occupying a single time slot wait between two successive transmissions.	04

- (c) Describe GPRS system architecture. 07
- Q.5** (a) Compare Wi-Fi and Wi-Max technology 03
- (b) Explain the working of UWB radio. Discuss the features, advantages and disadvantages of UWB technology 04
- (c) Discuss security issues and challenges in 5G technology. 07
- OR**
- Q.5** (a) Give the classification of GSM channels 03
- (b) Explain the working of Software Defined radio. Discuss the features, advantages and disadvantages of UWB technology 04
- (c) Write a short note on OFDM technology 07
