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Total No. of Pages : 02

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B.Tech. (AI&DS/ AI&ML/ IOT & Cyber security including Block chain Technology/CE/ CSE/ DS/ EE/ ECE/ EEE/ IT/ BCA) (Sem.-6)

WIRELESS COMMUNICATION

Subject Code : BTEC-601-18

M.Code : 79373

Date of Examination : 20-01-2025

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Write briefly:

- a. Define frequency reuse and frequency reuse factor.
- b. What is co-channel interference?
- c. Define Doppler spread and coherence time.
- d. Define handoff and its types.
- e. Define blocked call and call dropped rate.
- f. What is the role of Mobile Switching Centre (MSC) in cellular system?
- g. Define AMPS and ETACS.
- h. Why we use directional antenna instead of Omni-directional one in cell?
- i. Differentiate between TDMA and FDMA.
- j. Differentiate between Bluetooth and Zigbee.

SECTION-B

2. Explain different components and operation of cellular system.
3. With the help of cosine law and hexagon cell geometry, prove that for a hexagonal cell geometry, the co-channel reuse ratio is given by $Q = \sqrt{3N}$, where $N = i^2 + j^2 + ij$.
4. Classify types of fading based on multipath delay spread, doppler spread, symbol period and band width.
5. Write short notes on EDGE and IS-95 CDMA standard.
6. Derive the desired carries to interference (C/I) ratio from a normal case in an Omni directional antenna system.

SECTION-C

7. With the help of proper labeled diagram, explain the frame structure, architecture and speech processing of GSM system. Why are so many logical channels used in the GSM?
8. How diversity technique improves the performance of receiver in multipath scenario? Explain selection and switched combining in detail.
9. **Write a short note on:**
 - a. UMTS standards and its specification.
 - b. LTE-Advance systems.
 - c. Space Division Multiple Access and Packet Radio Protocols.

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.