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Total No. of Pages : 02

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**B.Tech. (ECE/IT/CSE/EE/AI ML/CE/DS/Internet of Things and Cyber
Security including Block Chain Technology/BCA) (Sem.-6)**

WIRELESS COMMUNICATION

Subject Code : BTEC-601-18

M.Code : 79373

Date of Examination : 03-01-2024

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. Answer briefly :

- a) What is forward CDMA and reverse CDMA channel?
- b) What is adjacent channel interference?
- c) What is the difference between soft and hard handoff?
- d) What is the difference between Pure and Slotted ALOHA?
- e) Define rms and excess delay spread of a fading channel.
- f) Differentiate between CDMA and SDMA.
- g) Define selection combining techniques.
- h) What is cell splitting?
- i) Define frequency selective fast fading channel.
- j) What is doppler spread and coherence time?

SECTION-B

2. With the help of a block diagram of basic cellular system, explain the operation and planning 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 $N = i^2 + j^2 + i j$.
4. Explain IS-54 and IS-136 US digital cellular system along with their key parameters.
5. What are the advantages of spread spectrum multiple access over FDMA and TDMA? Explain direct sequence spread spectrum in detail.
6. Explain the frame structure and different services of the GSM.

SECTION-C

7. With the help of proper mathematical expression, explain how maximal ratio and equal combining improves the performance of communication system?
8. How signal bandwidth, symbol period, channel coherence time and doppler spread is used to determine the nature of fading? Explain different types of fading based on these parameters.
9. **Write a short note on :**
 - a) CDMA 2000 standards and its specification.
 - b) Bluetooth and Zigbee.
 - c) 4G & 5G Mobile Techniques.

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.