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Total Number of Pages : 02

Course: BTech  
Sub\_Code: REC6C002

6<sup>th</sup> Semester Regular/Back Examination: 2022-23

SUBJECT : WIRELESS COMMUNICATION

BRANCH(S): ECE, ETC

Time : 3 Hour

Max Marks : 100

Q.Code : M074

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

Part-I

Q1 Answer the following questions : (2 x 10)

- Write merits and demerits of wireless communication systems.
- What do you mean by Dwell time?
- Define Co-channel reuse ratio.
- Define coherence time.
- Distinguish between duplexer and diplexer.
- Define spectral efficiency.
- Compare the basic technological differences between CDMA and LTE.
- List the features of 5G wireless technology.
- List the challenges of WiFi and Bluetooth technology.
- Why uplink frequency is high in satellite communication?

Part-II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- What is signal to interference ratio (SIR)? Derive it.
- How to improve the coverage and capacity in a cellular communication system.
- Find the Fraunhofer distance for an antenna with maximum dimension of 1.4 m and operating frequency of 850 MHz. If the antennas have unity gain, calculate the path loss.
- Calculate the received power at the receiver in a two-ray ground reflection model.
- Consider the AMPS system in which an SIR ratio of 22 dB is required for the accepted voice quality. What should be the reuse factor for the system? Assume path loss exponent is 3.5. What will be the reuse factor of the GSM system in which an SIR of 11 dB is required?
- Explain about TDMA frame structure with neat diagram.
- Draw the frequency reuse pattern for a cluster size of  $N=12$  and  $N=19$ .
- Sketch and Explain LTE network architecture and various interfaces.
- Explain about GPS navigation system in detail?
- What is near far problem in CDMA? How to overcome it?
- Differentiate between 4G and 5G?
- What is Radio Level Aggregation, explain in detail?

**Part-III**

**Only Long Answer Type Questions (Answer Any Two out of Four)**

- Q3 What is a cellular wireless communication system, how to improve its capacity and coverage explain with neat diagrams. How handoff can be done properly? Explain with neat diagrams. (16)
- Q4 How mobile call is handled in GSM system, explain in detail with neat diagrams? (16)
- Q5 Explain in detail about various multiple access techniques, their merits and demerits with neat diagrams. (16)
- Q6 Explain about the applications and challenges of various RF technologies in detail. (16)