Sub Code: BECT604A **ROLL NO……**

EVEN SEMESTER EXAMINATION, 2023 – 24

3rd yr. B.Tech. VI Semester Electronics & Communication Engineering

Cellular And Mobile Communication

Duration: 3:00 hrs **Max Marks: 100**

Note: - Attempt all questions. All Questions carry equal marks. In case of any ambiguity or missing data, the same may be assumed and state the assumption made in the answer.

Q 1.	Answer any four parts of the following. a) Define and explain location management and handoff management. b) Why is routing in multi-hop Ad hoc networks complicated? Explain. c) What is near-far effect in wireless network? Explain in brief. d) Assume a cellular system wherein a car travels at 200 km per hour speed. Calculate how often (approximately) handoffs would occur if the radius of the cell is 8 km? e) Distinguish between 3G and 4G cellular network in 6 points. f) A TDMA system uses 25 MHz for the forward link, which is broken into radio channels of 200 kHz. If 8 speech channels are supported on a single radio channel, how many simultaneous users can be accommodated?	5x4=20
Q 2.	Answer any four parts of the following. a) Calculate the time between handoffs if the cell radius is 10 kms where the vehicle travels at a speed of 130 kmph. b) What are the technical issues in planning of a cellular network? c) Define and explain real time co-channel interference of cellular mobile communications. d) What is known as directional antennas? Explain directional antennas. e) What is the advantage of soft handoff over hard handoff? f) Explain channel sharing and channel borrowing concepts in detail.	5x4=20
Q 3.	Answer any two parts of the following. a) Given a transmitter produces 50W of power. If this power is applied to a unity gain antenna with 900 MHz carrier frequency, find the received power at a free space distance of 100 m from the antenna. What is the received power at 10 km? Assume unity gain for the receiver antenna. b) Explain in detail all the propagation models with suitable diagrams. c) Summarize the features of various multiple access techniques used in wireless mobile communication. State the advantages and disadvantages of each technique.	10x2= 20
Q 4.	Answer any two parts of the following. a) What is the need for frequency reuse? Explain the frequency reuse concept and show that $N=i^2+ij+j^2$ Where N is the number of cells per cluster.	10x2= 20

	b) Explain in detail about a) Frequency channel utilization b) Significance of frequency management chart. c) Derive the impulse response model of a multipath channel and also obtain the relationship between Bandwidth and received power	
Q 5.	Answer any two parts of the following. a) Draw the GSM architecture and discuss various interfaces used in GSM. b) What is the necessity of link budget? Explain the link budget expression in detail. c) Write short notes on the following. i. Coherence Bandwidth ii. Doppler Spread iii. Small Scale Fading iv. Cell Splitting	10x2= 20

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