

7E7083

Roll No.

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B. Tech. VII - Sem. (Back) Exam., Feb.-March - 2021
 Electronics & Communication Engineering
 7EC4A Wireless Communication

Time: 2 Hours

Maximum Marks: 48
 Min. Passing Marks: 15

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Instructions to Candidates:

Attempt three questions, selecting one question each from any three unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.
 (Mentioned in form No.205)

1. NIL

2. NIL

UNIT- I

Q.1 (a) Explain the DSSS with binary phase shift keying and compare its performance with FHSS. [8]

(b) Write the properties of PN sequence. If the chip rate of a DSSS transmitter is 20Mbps, the message bit rate is 10 kbps. Find out the processing gain achieved, if bpsk is used. [2+6=8]

$$T_c = 20$$

$$P_c = \frac{T_b}{T_c}$$

OR

Q.1 (a) Explain FHSS with basic block diagram and find the expression for processing gain (G_p) in fast and slow systems. [8]

processing gain $\frac{T_b}{T_c} > 1$ $\frac{T_b}{T_c} < 1$

(b) Explain the properties of spreading codes. How are they generated? Briefly explain. [8]

UNIT- II

- Q.2 (a) Explain the transmitter and receiver block diagram of Microwave link. [8]
- (b) Explain the concept of diffraction loss as a function of path difference around an obstruction by Fresnel zones. [8]

OR

- Q.2 (a) Explain small scale fading and write the time dispersion parameters. [8]
- (b) Assume a receiver is 20 km from a 100W transmitter. The carrier frequency is 1000 MHz free space propagation is assumed, $G_t = 1$ and $G_r = 3$. Find the power at the receiver. [8]

UNIT- III

- Q.3 (a) Explain the TDMA principle of operation with TDMA/TDD example. Write its advantages and disadvantages and efficiency. Also, compare FDMA with TDMA. [8+2=10]
- (b) If a normal GSM time slot consists of 6 trailing bits, 8.25 guard bits, 26 training bits and 2 traffic bursts of 61 bits of data, find the frame efficiency. [6]

OR

- Q.3 (a) Briefly explain the Near-Far problem in both uplink and downlink of CDMA. [6]
- (b) Explain the CDMA principle of operation with its advantages and disadvantages.
Which type of Handoffs occur in CDMA mobile systems? [10]

UNIT- IV

- Q.4 (a) Explain the process of speech coding in GSM. [6]
- (b) Define Handoff and Handovers in GSM. [6]
- (c) Compare WiFi and WiMax Technology. [4]