

Con. 7470-13.

BB-11903

(3 Hours)

[Total Marks : 80

N.B. : (1) Attempt any **four** questions out of **six** questions.

(2) **Figures** to the **right** indicate **full** marks.

(3) Assume **suitable** data wherever **necessary** and indicate the same.

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|----|-------------------------|--|----|
| 1. | (a) | Explain RAKE receiver in CDMA. | 5 |
| | (b) | Explain various states in Bluetooth system. | 5 |
| | (c) | Compare WCDMA and CDMA2000. | 5 |
| | (d) | Why shape the antenna field pattern? Explain | 5 |
| 2. | (a) | Discuss the importance of cell clustering for cellular communication. Also explain the concept of frequency reuse. | 10 |
| | (b) | Describe GSM call set up procedure in detail. | 10 |
| 3. | (a) | What are the limitations of Mobile IP? How are these overcome? | 5 |
| | (b) | WiMAX is the revolution in Next Generation Wireless broadband communication—comment on this. | 5 |
| | (c) | Describe IEEE 802.11 architecture compare DSSS with FHSS. | 10 |
| | (a) | Explain intelligent cell concept and its applications. | 10 |
| | (b) | With a neat diagram, explain working Principle of adaptive equalizer in detail. | 10 |
| 5. | (a) | Derive the expression for (S/I) ratio in a worst case scenario with 60° sectorization. | 10 |
| | (b) | Compare Hiper LAN2 with IEEE 802.11 a/b. Highlight advantages and disadvantages of Hiper LAN Technology. | 10 |
| 6. | Write short notes on :- | | 20 |
| | (a) | EDGE. | |
| | (b) | RFID. | |
| | (c) | IS-95. | |
| | (d) | IMT-2000. | |

(3 Hours)

[Total Marks : 80

N. B. : (1) Question No. 1 is **compulsory**.(2) Solve any **three** questions from the **remaining**.(3) Assume **suitable** data if **required**.

1. (a) Explain operational principle of OFDM with symbol pattern. 10
 (b) A frequency-diversity microwave system operates at a RF 7.4 GHz. The IF is a low index frequency modulated sub-carrier. The baseband signal is a single mastergroup FDM system. The antennas are 2.4 m parabolic dishes. The feeder lengths are 120 m at one station and 80 m at the other station. The reliability objective is 99.995%. The system propagates over an average terrain that has a very dry climate. The distance between station is 40 km. The minimum carrier to noise ratio at the receiver input is 28 dB. Determine the following :
 Fade margin, antenna gain, free space path loss, total branching and feeder losses, receiver input power (C min), minimum transmit power and system gain.
 (branching loss = 3 dB, $L_f = 4.7$ dB/100 m $A_t = A_r = 43.1$ dB). 10
2. (a) Explain adaptive channel estimation for SC - FDE wireless system. 10
 (b) Why calibration is required in millimeter wave design ? Explain most frequently used calibration methods. 10
3. (a) What is beam switching array ? Compare them. 10
 (b) Explain need for beam forming in detail. 10
4. (a) Describe a protection switching arrangement : contrast the two types of protection switching arrangements. 10
 (b) Give advantages of $\frac{\pi}{4}$ - QPSK over other QPSK modulation system and explain modulator with block diagram. 10
5. (a) Explain noise coupling in a MIMO system. 10
 (b) Explain different manufacturing technologies that are suitable for millimeter wave antenna production. 10
6. (a) Define diversity. Describe most commonly used diversity at millimeter wave communication. 10
 (b) Draw block diagram of SC-FDMA systems and explain in detail. 10
