B.TECH. DEGREE EXAMINATIONS: NOVEMBER 2009

Fifth Semester

INFORMATION TECHNOLOGY

U07EC508: Telecommunication Systems

Time: Three Hours   **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. The minimum value of SWR is

   a. 1   b. 0   c. 1.5   d. 0.5

2. Magnetron is used as

   a. Frequency multiplier   b. a mixer   c. an amplifier   d. an Oscillator

3. The height of the satellite in a equatorial orbit is

   a. 35,800 miles   b. 22,300 miles   c. 6800 miles   d. 100 miles

4. The HPAs in most satellites are

   a. Klystrons   b. Vacuum tubes   c. TWT   d. Magnetrons

5. The fastest and most sensitive light detector is

   a. PIN diode   b. PN diode   c. APD   d. READ diode

6. Light travels in a

   a. straight line   b. circle   c. ellipse   d. curve

7. IS-54 system uses

   a. CDMA   b. TDMA   c. FDMA   d. SDMA

8. The cordless telephones are _____ systems.

   a. simplex   b. half duplex   c. one way   d. full duplex

9. The chip rate of IS-95 system with direct sequence is

   a. 1.23Mbits/s   b. 2.13Mb/s   c. 3.12Mb/s   d. 1.32Mb/s

10. AMPS is _____ system

    a. analog   b. digital   c. hybrid   d. discrete

PART B (10 x 2 = 20 Marks)

11. Define surge impedance of a transmission line.

12. A SWR meter reads a forward power of 450 watts and reverse power of 25 watts. Calculate the SWR.

13. What is the purpose of small rockets in a satellite?

14. Name four types of surveillance sensors used in satellites.

15. What is the basic principle of a fiber-optic cable?

16. Compare ILD with LED.

17. Name the two main digital protocols used in paging systems.

18. Draw the format of 2B1Q ISDN signal.

19. What are the information available in a Subscriber ID module?

20. Differentiate between soft hand-off and hard hand-off.

PART C (5 x 14 = 70 Marks)

21 (a) (i) A parallel two-wire transmission line is separated by 0.8 inch apart and each wire
has a diameter of 0.0774 inch. Calculate its characteristics impedance. (4)

(ii) Draw the standing wave pattern of an open & short circuited transmission line and
compare its performance characteristics. (10)

(OR)

(b) (i) In a space wave propagation the transmitting antenna is 150 ft high and the
receiving antenna is 40 ft high. Find the greatest distance between the transmitter
and the receiver. (4)

(ii) With a neat schematic, explain the operation of TWT amplifier. List its
applications. (10)

22 (a) (i) Draw the block diagram of a regenerative transponder and explain its unctions. (7)

(ii) Explain the role of satellites in surveillance applications. (7)

(OR)

(b) (i) Draw the general block diagram of an earth station and explain the operation of
various sub-systems. (12)

(ii) List the common communications satellite bands. (2)

23 (a) (i) Explain the basic elements of a fiber-optic communication link. (8)

(ii) Explain the reflection and refraction characteristics of a light wave. (6)

(OR)

(b) (i) Compare the performances of single mode step index, multi mode step index and
multi mode graded index fibers. (8)

(ii) Explain the principle of APD. (6)

24 (a) With necessary diagrams, explain the ISDN interfaces, frame formats and applications.

(OR)

(b) (i) Draw the block diagram of a facsimile machine and explain its operation.   (10)

  (ii) What are the different types of ITU-T fax standards?   (4)

25 (a) (i) Draw the block diagram of a cordless telephone system and explain its concepts.(10)

  (ii) What is the need for power control in CDMA? Explain.   (4)

(OR)

(b) Write short note on the following mobile communication standards.

  i) IMTS   ii) AMPS   iii) GSM   iv) IS-95.   (3+3+4+4)

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