

B.TECH DEGREE EXAMINATIONS: NOV/DEC 2010

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. An ungrounded antenna near the ground
 - a) acts as a single antenna of twice the height
 - b) is unlikely to need an earth mat
 - c) act as an antenna array
 - d) must be horizontally polarized
2. The TWT is sometimes preferred to the magnetron as a radar transmitter output tube because it is
 - a) capable of a longer duty cycle
 - b) a more efficient amplifier
 - c) more broadband
 - d) less noisy
3. The most common carrier frequency used for satellite communications are the
 - a) 6/4 – GH2 band
 - b) 58/54 – GH2 band
 - c) 64/59 – GH2 band
 - d) 4/2 – GH2 band
4. Interlacing is used in Television to
 - a) produce the illusion of motion
 - b) ensure that all the lines on the screen are scanned, not merely the alternate ones
 - c) simplify the vertical sync pulse train
 - d) avoid flicker
5. The output from a laser is monochromatic: this means that it is
 - a) infrared
 - b) polarized
 - c) narrow-beam
 - d) single-frequency
6. Telephone traffic is measured
 - a) with echo cancellers
 - b) by the relative congestion
 - c) in terms of the grade of service
 - d) in erlangs
7. The mobile unit transmits and receives on
 - a) reverse control and voice channels
 - b) forward control channel
 - c) forward voice channel
 - d) call progress tone

8. The Local Loop is
- a) An antenna used for telephone communications
 - b) the connection from the user's telephone to the central office
 - c) a cell site
 - d) A ring network used to connect users to the telephone office

9. Which digital cell phone system uses spread spectrum?

- a) AMPS
- b) GSM
- c) IS-95
- d) IS-54

10. ISDN uses

- a) Frequency-division multiplexing
- b) time-division multiplexing
- c) code-division multiplexing

PART B (10 x 2 = 20 Marks)

- 11. Define standing Wave ratio.
- 12. Name three main types of radio wave propagation.
- 13. What are the six main subsystems of a satellite?
- 14. What is a satellite telephone? What is its frequency band?
- 15. Define Critical angle.
- 16. State the difference between step Index and Graded Index fibers.
- 17. Draw a block diagram of a basic paging receiver.
- 18. What is the name of the semiconductor photosensitive device used in most modern fax machines to convert a scanned line into an analog signal?
- 19. What is an Hand off?
- 20. Draw the 2B1Q ISDN signal.

PART C (5 x 14 = 70 Marks)

- 21. a) (i) Explain how quarter- and half-wave transmission lines can act as tuned circuits at high frequencies. (10)
 - (ii) Briefly explain polarization. (4)
 - (OR)
 - b) (i) Explain in detail about Half-wave dipole and folded dipole. (7)
 - (ii) With block diagram explain the principle of working of pulsed radar. (7)
22. a) (i) With neat sketch explain three axis stabilization in satellite attitude control. (7)

(ii) Write a note on Angle of inclination and Angle of elevation of a satellite orbit. (7)

(OR)

b) With General block diagram, explain the organization of a earth station in detail.

23. a) Draw a basic block diagram of a fiber optic communication system and explain the functionality of each block.

(OR)

b) (i) Explain how light is propagated through a fiber optic cable. (7)

(ii) Explain the operation of a photodiode fiber optic receiver. (7)

24. a) Discuss in detail about the operation of a cellular telephone system.

(OR)

b) (i) Define ISDN and explain in operation.

(ii) Explain the following Parts of a basic telephone:

Ringer, Switch Hook, Dialing Circuits, Handset & Hybrid. (7)

25. a) Explain the following Digital cellular telephone systems.

(i) GSM System (7)

(ii) IS-95 System (7)

(OR)

b) Discuss in detail about the following types spread spectrum techniques

(i) Frequency Hopping (7)

(ii) Direct sequence (7)
