B.E. DEGREE EXAMINATIONS: NOVEMBER 2009

Fifth Semester

U07EC509 COMMUNICATION ENGINEERING

(Common to Electrical and Electronics Engineering & Electronics and Instrumentation Engineering)

Time: Three Hours

Maximum Marks: 100

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. An FM radio receiver is tuned to a 90. 6 Mhz broadcast station. It will receive an image frequency of

   (A) 110 MHz   (B) 112 MHz   (C) 114 MHz   (D) 120 MHz

2. The radiated power of AM transmitter is 10KW. The power of the unmodulated carrier for a modulation index is

   (A) 8.24 KW   (B) 8.47 KW   (C) 9.24 KW   (D) 9.46 KW

3. For a carrier frequency of 6GHz and a distance of 50Km, the free space path loss is

   (A) 142 dB   (B) 180dB   (C) 100 dB   (D) 120 dB

4. Which layer is the lowest layer of the ionosphere?

   (A) D   (B) E   (C) F   (D) F1

5. For a PCM system with a maximum audio frequency of 4KHz, the minimum sampling rate is

   (A) 8KHz   (B) 16 KHz   (C) 2 KHz   (D) 1 KHz

6. The line speed of DS-0 channel PCM system is

   (A) 64Kbps   (B) 128Kbps   (C) 24Kbps   (D) 16Kbps

7. The first layer of OSI layer is

   (A) Physical   (B) Network   (C) Data link   (D) Application

8. UART is used for which of the following data transmissions/

   (A) synchronous and parallel   (B) asynchronous and parallel

   (C) synchronous and serial   (D) asynchronous and serial

9. The equivalent noise temperature corresponding to a noise figure of 4.1 dB is

   (A) 471 K   (B) 453 K   (C) 420 K   (D) 410 K

10. The process of maneuvering a satellite within a pre-assigned window is called

    (A) reusing   (B) stabilization   (C) monitoring   (D) station keeping

PART B (10 x 2 = 20 Marks)

11. Write the difference between low level and high level modulation.

12. What is phase modulation?

13. Define the term reflection coefficient.

14. Define the term maximum usable frequency.

15. Draw the BPSK waveform for the binary data 1101101

16. Define the term bandwidth efficiency.

17. What is B-ISDN?

18. What are CRCs?

19. Define the term Numerical Aperture.

20. Define apogee and perigee.

PART C (5 x 14 = 70 Marks)

21. a) i) Derive the relationship between the carrier and sideband power in a DSB-SC AM signal.

   ii) Draw the block diagram of an AM super heterodyne receiver and explain the function of each stage.

(OR)

b) i) Discuss the significance of noise triangle.

   ii) Describe the operation of reactance FM modulator.

22. a) i) Describe the electrical and physical properties of a transmission line.

   ii) Discuss about the quarter wavelength transformer matching.

(OR)

b) i) Describe the characteristics of any 5 types of transmission lines.

   ii) Explain the behavior of a Transmission line that is open circuited of length $\lambda/4$.

23. a) i) Draw the constellation diagram of QPSK modulation and explain the demodulation of QPSK.

   ii) Derive an expression for the probability of error in a BFSK receiver.

(OR)

b) i) Explain the significance of I and Q channel in a QPSK system.

ii) Explain the method of generation of BPSK and the demodulation of the same.

24. a) i) Explain about the seven layers of OSI hierarchy model.

ii) Discuss the function of serial interface.

(OR)

b) i) Discuss how checksums are used for error detection.

ii) Write short notes on Local Area Networks.

25. a) i) Discuss the operation the working of LED and about its characteristics.

ii) Explain about the various types of losses in an optic fiber communication system.

(OR)

b) i) Discuss the operation the working of photodiode as a detector and about its characteristics.

ii) Explain the operation of geosynchronous satellite.

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