Register Number: ……………………..

B.E DEGREE EXAMINATIONS: APRIL/MAY 2014

(Regulation 2009)

Fifth Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

ECE260**:** Communication Engineering

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The bandwidth of AM is twice the highest _____ signal frequency.

   a) Modulating   b) Modulated

   c) Carrier   d) Reference

2. An Ideal FM wave has _____ bandwidth.

   a) Finite   b) Infinite

   c) 2Fm   d) Small

3. If the line has load equal to _____ then _____ power is transmitted from source to load.

   a) F_o, average   b) Z_o , maximum

   c) F_o, minimum   d) Z_o , minimum

4. Wave propagation in which range will not be affected by the ionosphere?

   a) VHF   b) UHF

   c) HF   d) LF

5. What is the minimum sample rate used in a PCM system with a maximum audio input frequency of 4Khz?

   a) 8Khz   b) 4Khz

   c) 2Khz   d) 1Khz

6. Bandwidth of BFSK is _____ Hz.

   a) $2[\Delta f + 1/ t_b]$ b) $[\Delta f + 1/ t_b]$

   c) $[\Delta f + 1/ t_b] / 2$ d) $[\Delta f + 1/ t_b] / 4$

7. EBCDIC character set has _____ combinations.

   a) 128   b) 256

   c) 512   d) 64

8. The bit rate of B- channel ISDN is _____.

   a) 64Kbps   b) 16Kbps

   c) 384Kbps   d) 1536Kbps

9. The angular velocity of Geostationary satellites is _____ to the angular velocity of Earth.

   a) Greater   b) Lesser

   c) Equal   d) Higher

10. Avalanche photodiodes has _____ structure.

    a) PIN   b) PIPN

    c) PPN   d) PNP

PART B (10 x 2 = 20 Marks)

11. Draw the modulating signal waveform Vm(t), Carrier signal waveform Vc(t) and AM waveform Vam(t) and indicate the necessary parameters.

12. Mention the disadvantages of TRF receiver.

13. What is the need for impedance matching and give its types.

14. Define free space path loss and give the formula for calculating the same.

15. What are mark and space frequencies?

16. Draw the frame format for a T1 carrier system.

17. Mention the seven layers of ISO-OSI seven layer architecture.

18. Define LAN.

19. Mention the advantages of optical fiber systems.

20. Define prograde and retrograde orbits.

PART C (5 x 14 = 70 Marks)

21. a) i)   Derive the voltage distribution of DSB gAM wave.   (4)

       ii) One input to a conventional AM modulator is 500Khz carrier with an amplitude   (10)
            of 20Vpp. The second input is a 10Khz modulating signal that is of sufficient
            amplitude to cause a change in the output wave of ±7.5Vpp. Determine

            a) Upper and lower side frequencies.

            b) m & M.

            c) Draw the output spectrum.

            d) Peak amplitude of the modulated carrier.

            e) Vmax & Vmin.

(OR)

    b) i)   Define Heterodyning.   (2)

       ii) Draw the block diagram and explain the operation of a super heterodyne receiver   (12)
            in detail.

22. a) i) Explain the different transmission line losses. (7)

   ii) Brief about the standing waves on open and shorted line. (7)

(OR)

   b) Explain the different types of radio wave propagation.

23. a) i) Explain BPSK modulation and demodulation. (10)

   ii) For a BPSK modulator with a carrier frequency of 70Mhz and an input bitrate of (4) 100Mbps determine the bandwidth, baudrate.

(OR)

   b) i) Draw the block diagram of a single channel simplex PCM system and explain its (10) blocks.

   ii) Brief about TDM. (4)

24. a) Explain the error detection and error correction techniques used in data communication.

(OR)

   b) Differentiate asynchronous and synchronous modems. Explain low, medium and high speed modems.

25. a) i) Draw the block diagram of satellite up-link & downlink models and explain the (10) blocks.

   ii) Brief about the transponder section. (4)

(OR)

   b) i) List and briefly describe the losses associated with fiber cables. (10)

   ii) List the primary characteristics of optical detectors. (4)

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