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Question Paper Code : 31234

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Fifth Semester

Electrical and Electronics Engineering

080280046 – COMMUNICATION ENGINEERING

(Common to 080280036 – Communication Engineering for B.E. Part-Time – Fourth Semester Electrical and Electronics Engineering)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. An AM broadcast station transmits 2kw if carrier power and uses an index of modulation of 0.7. Calculate power of each sideband.
2. Mention the merits and demerits of super heterodyne receivers.
3. Define the term standing wave ratio as applied to a transmissionline.
4. What is meant by White Gaussian Noise? Why is it called so?
5. Draw the schematic block diagram of a Digital Communication System.
6. State Sampling theorem.
7. List the objectives of Computer Communication.
8. Write the significance of modem in Computer Networks.
9. Contrast synchronous and nonsynchronous satellites.
10. Mention advantages of optical fibre communication.

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PART B — (5 × 16 = 80 marks)

11. (a) Derive Amplitude Modulated equation. For an AM DSBFC modulator with a carrier frequency $f_c = 1000$ KHz and a maximum modulating signal $f_m(\text{max}) = 5$ KHz. Determine,
- (i) Frequency limits for the upper and lower sidebands, bandwidth (3)
 - (ii) Assume the modulated signal is given to superheterodyne receiver and determine the image frequency. (3)
 - (iii) Upper and lower side frequencies produced when the modulating signal is a sinusoidal single frequency 3 KHz tone. (3)
 - (iv) Sketch the output frequency spectrum. (3)
 - (v) Draw the frequency spectrum of DSB-SC and SSB-SC modulated signal, when modulating signal is 9 KHz sinusoidal signal. (4)

Or

- (b) Explain the basic building block diagram of super heterodyne receiver, in detail. Mention the basic differences between AM and FM receivers.
12. (a) Using the general voltage and current relationships on a transmission Lines, derive an expression for the input impedance of a lossless open circuited line.

Or

- (b) Explain the following :
 - (i) Ground wave and space wave propagation (10)
 - (ii) Impedance matching. (6)
13. (a) What is the need for multiplexing? Explain Time division multiplexing with neat block diagram and mention its advantages, disadvantages and application.

Or

- (b) What are the most predominant modulation schemes used in digital radio system? Explain phase shift keying, transmitter and receiver in detail and obtain its probability of Error expression.

14. (a) Discuss error or correction and detection code with suitable example.

Or

(b) Explain ISO-OSI seven layer architecture for WAN, with the functionalities of each layer, in detail. (16)

15. (a) Explain the functional characteristics of an uplink, a transponder and downlink model for satellite system.

Or

(b) Discuss the following :

(i) Satellite system link equation (8)

(ii) Light propagation through fiber. (8)