Reg. No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 41234

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 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. The carrier performs certain functions in radio communication. What are they?

2. When the modulation is 80%, an AM transmitter produces 20KW. How much of this is carrier power?

3. Which circuit device is used to connect a balanced transmission line to an unbalanced load? Write its unique features.

4. Define velocity factor and Di-electric constant.

5. For a PCM system with a maximum audio input frequency of 4KHz, determine the minimum sample rate and alias frequency produced if a 5KHz audio signal were allowed to enter the sample an hold circuit.

6. What is slope overload?

7. Show an example of ENQ/ACK line discipline.

8. List the key objectives of developing ISDN architecture.

9. Give out the formula for calculating round trip time delay of Geosynchronous satellites.

10. What is index profile? Classify them.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Use a circuit diagram and appropriate wave forms to explain how a collector modulated class C amplifier is able to generate AM. (10)

(ii) List the advantages of vestigial side band transmission. Illustrate its usage for TV video transmission. (6)

Or

(b) (i) Give out the frequency spectrum of FM wave and perform the mathematical analysis using bessel functions. Observe its characteristics. (10)

(ii) In a broadcast superheterodyne receiver having no Rf amplifier, the loaded Q of the antenna coupling circuit is 100. If the IF is 455KHz. Calculate (1) the image frequency and its rejection ratio at 1080KHz. (2) The image frequency and its rejection ratio at 25MHz. (6)

12. (a) Show the incident and reflected waves on a transmission line terminated in open circuit.

Or

(b) Define the following :

(i) Critical frequency

(ii) Virtual height

(iii) Maximum usable frequency

(iv) Skip distance.

13. (a) (i) Determine the peak frequency deviation, minimum bandwidth and band for a binary FSK signal with a mark frequency of 49KHz, a space frequency of 51KHz and an input bit rate of 2 Kbps. (9)

(ii) Derive the relationship between information capacity bits and bit rate. (7)

Or

(b) Draw the block diagram of two channel PCM-TDM system with a TDM frame explain its operation.

14. (a) (i) Broadly comment on the access control methodologies of local area network. (8)

(ii) List and describe the HDLC operational modes. (8)

Or

(b) (i) How does BSC protocol achieve transparency? (6)

(ii) Determine the BCS for the following data and CRC generating polynomials.

$G(x) = x^7 + x^4 + x^2 + x^0 = 10010101$.

$P(x) = x^5 + x^4 + x^1 + x^0 = 110011$. (10)

15. (a) What are the possible types of fiber losses? Broadly comment and show them as a function of wave length.

Or

(b) Name the basic sections of satellite system. Draw the block diagram of satellite models and explain.

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