Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 80452

B.E. /B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Fifth Semester

Electrical and Electronics Engineering

EC 2311/EE 54/10144 EE 501– COMMUNICATION ENGINEERING

(Regulations 2008/2010)

(Common to PTEC 2311 for B.E (Part-Time) Fifth Semester–EEE–Regulations 2009)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Draw the frequency spectrum of AM wave.

2.   Mention the advantage and disadvantage of FM.

3.   State Shannon's capacity limit.

4.   List out few demerits of DPCM.

5.   Define quantization error

6.   State the significance of source coding.

7.   What are the types of characters used in data communication codes?

8.   List the channels and their data rate used in ISDN.

9.   What is a satellite's footprint?

10. What is SCADA?

PART B — (5 × 16 = 80 marks)

11. (a) (i)   Define and derive the free space path loss.   (6)

         (ii) "Space wave propagation distance can be extended by increasing
               either the transmit or receive antenna height or both"— Justify the
               statement with the required diagrams and derivation.   (10)

                                        Or

     (b) (i)   With a neat diagram, explain the process of matching a load to a
               transmission line with a shorted stub.

         (ii) Perform the phasor analysis of input impedance for a transmission
               line lees than one quarter wavelength long.

12. (a) Explain the concept and method of generating of PWM. What are the advantages and application of PTM?

Or

(b) Explain DPCM technique with neat block diagram. For minimum line speed with an 8 bit PCM for speech signal ranging upto 1volt. Calculate the resolution and quantization error. Calculate the coding efficiency for a resolution of 0.01 volt with the 8 bit PCM.

13. (a) (i) Given states s={S_0,S_1,S_2,S_3,S_4} and their probabilities P={0.4,0.2,0.2,0.1,0.1}. Find coding efficiency and entropy for Huffman coding. (8)

    (ii) Give the procedure for Shannon Fano coding and use the procedure to obtain the code for the source symbols S_0,S_1,S_2,S_3,S_4,S_5 with their respective probabilities 1/2, 1/3, 1/12, 1/15, 1/120, 1/120. (8)

Or

(b) Discuss the concept of coding and decoding methods of block codes with its mathematical frame work and diagram. (16)

14. (a) List out the various multiple access techniques and explain any two in detail. (16)

Or

(b) State the need for spread spectrum modulation and explain its operation with a neat block diagram. (16)

15. (a) Explain the concept of satellite communication system and its application.

Or

(b) Write short notes on

    (i) Optical sources and detectors (10)

    (ii) SCADA. (6)

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