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**Question Paper Code: 54423**

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Electronics and Instrumentation Engineering

15UEC423 - COMMUNICATION ENGINEERING

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

- Carson's rule gives the appropriate minimum bandwidth required for angle modulated wave and is given by  
(a)  $BW=2(f_m * n)Hz$       (b)  $BW=2\Delta f$       (c)  $BW=2f_m$       (d)  $BW= 2(f_m\Delta + f_m)Hz$
- The digits of the binary representation of the code number are transmitted as pulses. Hence the system of transmission is called  
(a) PAM      (b) PCM      (c) PWM      (d) DM
- Identify the number of redundant bits in a (7, 4) block code.  
(a) 1      (b) 2      (c) 3      (d) 4
- In \_\_\_\_\_, the stations share the bandwidth of the channel in time.  
(a) FDMA      (b) CDMA      (c) TDMA      (d) none of these
- Which type of fiber optic cable is most widely used?  
(a) Single-mode step-index      (b) Multimode step-index  
(c) Single-mode graded-index      (d) Multimode graded-index

PART - B (5 x 3 = 15 Marks)

- Define standing wave ratio.
- Calculate the capacity of a standard 4 KHz telephone channel with a 30 dB signal to noise ratio.

8. List the properties of an entropy.
9. Mention the features of FDMA.
10. Define Geo synchronous satellite.

PART - C (5 x 16 = 80 Marks)

11. (a) Discuss in detail about the working of a SSB transmitter and receiver. (16)

Or

- (b) Explain in detail the Armstrong method of FM generation and compare NBFM and WBFM. (16)

12. (a) Draw the block diagram of a DPCM transmitter and receiver and explain. (16)

Or

- (b) Explain MSK and GMSK with block diagrams. (16)

13. (a) (i) Write in detail the procedure of Shannon – fano coding scheme. (6)

- (ii) Apply the above Shannon- fano algorithm to a source which generates symbols  $x_1, x_2, x_3, x_4, x_5, x_6$  with the probabilities 0.3, 0.25, 0.2, 0.12, 0.08 & 0.05. (10)

Or

- (b) Explain source coding techniques types with example. What are different types of codes? Give details. (16)

14. (a) Discuss the types of spread spectrum modulation techniques with neat diagrams. (16)

Or

- (b) Explain TDMA along with its features. (16)

15. (a) Briefly describe optical sources and detectors. (16)

Or

- (b) Explain the construction and working of light detectors used in fiber optic communication. (16)