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**Question Paper Code: 54423**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Fourth Semester

Electronics and Instrumentation Engineering

15UEC423 - COMMUNICATION ENGINEERING

(Regulation 2015)

Duration: 1.15 hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

- Balanced modulator is not used in the generation of  
(a) AM                      (b) DSB-SC                      (c) SB-SC                      (d) VSB
- 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
- Which of the following pulse modulation is digital  
(a) PAM                      (b) PPM                      (c) PCM                      (d) PWM
- Identify the number of redundant bits in a (7, 4) block code.  
(a) 1                      (b) 2                      (c) 3                      (d) 4
- If the minimum Hamming distance defining the error control capability of the code is 5, then the error control capability provides  
(a) Double error correction                      (b) Single error detection  
(c) Single error correction                      (d) Error cannot be detected

7. In \_\_\_\_\_, the stations share the bandwidth of the channel in time.  
(a) FDMA                      (b) CDMA                      (c) TDMA                      (d) none of these
8. Latency is low in  
(a) TDM                      (b) TDM and FDM      (c) FDM                      (d) None of these
9. MEO satellites operate at  
(a) 1.2GHz -1.66GHz                      (b) 2GHz-18GHz  
(c) Greater than 10 GHz                      (d) Greater than 20 GHz
10. Population inversion is a property found in  
(a) LED                      (b) LASER                      (c) PIN photo diode                      (d) APD

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. Explain in detail the Armstrong method of FM generation and compare NBFM and WBFM. (8)
12. Explain the concept of MSK and GMSK techniques in data communication. (8)
13. With neat block diagrams and example describe in detail about linear block codes and convolutional codes. (8)
14. Describe the structure of Code Division Multiple Access. (8)
15. Illustrate the types of multiple access arrangements used in satellite communication and explain. (8)