JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2023

B.Tech-I Semester (ECM)

COURSE CODE (CREDITS): 20B11EC512 (3) MAX. MARKS: 35

COURSE NAME: Communication Systems

COURSE INSTRUCTORS: Lt Pragya Gupta MAX. TIME: 2 Hours

Note: (a)All questions are compulsory.

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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Q1. With the help of a neat diagram of AM Wave derive the expression of Modulation Index (m).

[4] (CO 2)

Q2. How can you represent DSB-SC wave Mathematically. Explain each term of the equation. Also draw the frequency spectrum of DSB-SC. For DSB-SC derive- **[5] (CO 2)**

Q3. Explain the working of Delta modulation transmitter and receiver with the help of block diagram. With the help of wave form discuss how we modulate and demodulate the DM signal. **[7] (CO 5)**

Q4. Draw the neat block diagram of Digital Communication System. Write minimum two advantages and disadvantages of Digital Communication and Minimum four differences between Analog and Digital Communication.

[6] (CO 4)

Q5. Define ASK, PSK and FSK modulation schemes and sketch their waveform representations. **[5] (CO 5)**

Q6. For a 8 bit ADC with analog input voltage ranging from -2.5 volts to +2.5 volts, determine-

i. Step size
ii. Quantization level when the analog voltage is 1.33 volts
iii. Quantization error
iv. Dynamic range

[4] (CO 3)

Q7. Using Mid Tread quantizer, find the encoding and decoding done by DPCM system for the given input sequence {0.1, 0.3, 1.5, 0.7, 1, 2.3}. Assume first order prediction filter u(n-1) **[4] (CO 3)**