

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2023

B.Tech-I Semester (ECM)

COURSE CODE (CREDITS): 20B11EC512 (3)

MAX. MARKS: 25

COURSE NAME: Communication Systems

COURSE INSTRUCTORS: Lt. Pragya Gupta

MAX. TIME: 1 Hour 30 Minutes

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*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. 1GHZ carrier is frequency modulated by a 10 kHz sinusoid, so that the peak frequency deviation is 1 kHz. Determine: [5] (CO-2)

- (a) The approximate bandwidth of the FM signal.
- (b) The bandwidth if the modulating signal amplitude were doubled.
- (c) The bandwidth if the modulating signal frequency were doubled.
- (d) The bandwidth if the amplitude and the frequency of the modulating signal were doubled.

Q2. Derive the Mathematical expression of FM carrier from the fundamentals. Also differentiate FM and PM. [3+2] (CO-2)

Q3. With a neat block diagram, discuss the indirect method to generate wideband FM.

[5] (CO-2)

Q4. Write a note on the following:

- a) Sampling Process
- b) Advantages and Disadvantages of DSB-SC
- c) PWM and PPM
- d) Need of modulation
- e) Envelope Detector

[2x5] (CO-1,2,3)