

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- Oct 2017

B.Tech/ M.Tech 7th / 1st Semester

COURSE CODE: 10M11EC111

MAX. MARKS:15

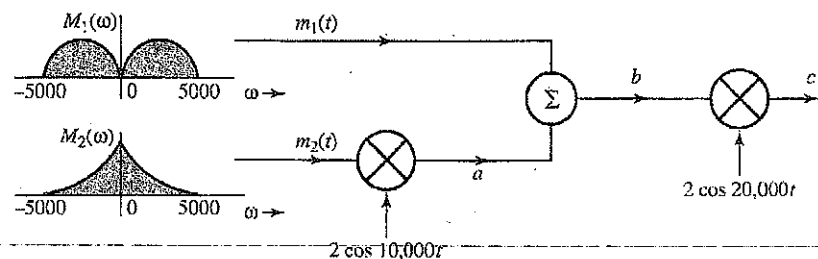
COURSE NAME: Advanced Communication System

COURSE CREDITS:03

MAX. TIME: One Hr

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. A carrier signal of 1 MHz is amplitude modulated by message signal of 2 KHz. Find the range of $R_L C$ product for proper envelope detection. (2)
2. Given that $x(t) = A \cos \omega_c t$ find Autocorrelation function, PSD, and power of the signal. (4)
3. If unmodulated AM Tx power is 500W, find AM Tx Power with 100% modulation. (2)
4. For FM signal having maximum frequency deviation of 16KHz, corresponding message frequency component is 4KHz. Find β and Bandwidth. (2)
5. Draw the Costas receiver block diagram. (1)
6. Two signals $m_1(t)$ and $m_2(t)$, are to be transmitted simultaneously over a channel by the multiplexing scheme shown in Fig below. The signal at point b is the multiplexed signal, which now modulates a carrier of frequency 20, 000 rad/s. The modulated signal at point c is transmitted over a channel.
 - A) Sketch signal spectra at points a , b , and c . (1.5)
 - B) What must be the bandwidth of the channel? (0.5)
 - C) Design a receiver to recover signals $m_1(t)$ and $m_2(t)$ from the modulated signal at point c . (2)



END

EC-4, BT MT