

Code No: RT22045

R13**SET - 1****II B. Tech II Semester Supplementary Examinations, November - 2018****ANALOG COMMUNICATIONS**

(Electronics and communication Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

PART -A

1. a) What is meant by the term amplitude modulation? Write the expression for AM wave? (4M)
- b) Describe vestigial sideband transmission. Give its applications? (4M)
- c) Define the terms frequency sensitivity and frequency deviation? (3M)
- d) Draw the phasor diagram for an AM signal plus noise. (4M)
- e) What is multiplexing? Name the types of multiplexing? (4M)
- f) Write the advantages of superheterodyning. (3M)

PART -B

2. a) Briefly discuss about the frequency division multiplexing? (8M)
- b) The peak amplitude of an amplitude modulated signal varies from 2V to 10V. Calculate the modulation index, modulation efficiency and total power? (8M)
3. a) Explain the generation of DSB-SC signal using balanced modulator? Derive the expression for DSB-SC signal? (8M)
- b) A carrier signal $c(t) = 10\cos(2\pi \cdot 10^6 t)$ is modulated by a message signal $m(t) = 2\cos(8\pi \cdot 10^3 t)$ to generate a DSB-SC signal. Sketch the spectrum, calculate the B.W and power? (8M)
4. a) List out the differences between AM and FM? (8M)
- b) A carrier is frequency modulated by a sinusoidal signal of frequency 2kHz resulting in a maximum frequency deviation of 6kHz.
 - i) Calculate the modulation index and band width
 - ii) If the amplitude of the message signal is increased by a factor of 3 and its frequency is decreased to 2 kHz. Calculate the modulation index and B.W
5. a) Explain the threshold effects in angle modulation system with suitable diagrams? (8M)
- b) Compare the noise performance of SSB system with that of the DSB-SC system? (8M)
6. a) Explain the procedure for pulse width modulation and demodulation with the help of block diagram. (8M)
- b) Describe the synchronization procedure for PAM, PWM and PPM signals. (8M)
7. a) Describe the circuit of an FET amplitude limiter, and with the aid of the transfer characteristic explain the operation of the circuit. (8M)
- b) Draw the block diagram of a superheterodyne receiver and explain the function of each block? (8M)