

333552(33)**BE (5th Semester)
Examination, Nov.-Dec., 2017****(New Scheme)****Principles of Communication System**

Time Allowed : 3 hours *Maximum Marks* : 80
Minimum Pass Marks : 28

Note : All questions are compulsory and carry equal marks. Part (a) of each question is compulsory and carry 2 marks. Attempt any two parts from (b), (c) and (d) which carry 7 marks each.

1. (a) Why are overmodulated and suppressed carrier AM signals a problem from receiver point of view? [2]
- (b) Derive the expression for effective modulation index for multi-tone signal. [7]
- (c) Why SSB and DSB are not suitable for television broadcasting? How VSB is a compromise between SSB and DSB? [7]
- (d) A standard AM transmission, sinusoidally modulated to a depth of 30%, produces side frequency of 4.928 and 4.914 MHz.

[2]

- The amplitude of each sideband frequency is 75 V. Determine the amplitude and frequency of carrier. [7]
2. (a) If you have a choice to select AM and FM, for what condition AM will be selected? [2]
- (b) Define angle modulation in general and make a differentiation between frequency and phase modulation. [7]
- (c) A carrier is frequency modulated by sinusoidal modulating signal of frequency 2 kHz resulting in a frequency deviation of 5 kHz. What is the bandwidth occupied by the modulated waveform? The amplitude of modulating sinusoid is increased by a factor of 3 and its frequency lowered to 1 kHz. What is the new bandwidth? [7]
- (d) With the suitable example and block diagram, explain Armstrong method for generation of WBFM signal. [7]
3. (a) What do you mean by digitization? [2]
- (b) What is the significance of quantization? Derive the expression for quantization error. [7]
- (c) What is the significance of sampling in digital communication? State and prove sampling theorem. [7]

(Continued)

[3]

- (d) Make a comparison between DM and ADM. Which performance is better and why? [7]
4. (a) What are the advantages of digital modulation? [2]
- (b) Briefly describe the functional blocks in a digital communication system. [7]
- (c) Explain FSK. Draw the functional block diagram of modulator and demodulator of FSK. [7]
- (d) Explain QPSK with transmitter and receiver system. [7]
5. (a) What are the advantages of satellite communication? [2]
- (b) What are the different types of splices and connectors used in optical communication? [7]
- (c) Draw the block diagram of satellite communication. Explain each component of satellite communication. [7]
- (d) What are the different types of losses in optical fibers? [7]