

SE sem-IV (CBSCS) Electronics Engg  
Fundamentals of Comm.  
Engg.

~~8 May 2015~~  
8 June 2015

QP Code : 3534

(3 Hours)

[ Total Marks : 80

- N. B. : (1) Question No. 1 is compulsory.  
(2) Attempt any three questions from the remaining five questions.  
(3) Assume suitable data if required.

1. Answer the following (any four) :- 20
  - (a) Classify and explain the various noises that affect communication.
  - (b) DSB-FC (AM) is a wastage of power and bandwidth. Justify.
  - (c) Derive the expression for frequency modulated wave.
  - (d) What are pre-emphasis and de-emphasis.
  - (e) Explain companding and its need in communication.
  
2. (a) Explain basic block diagram of communication system in detail. 6  
(b) Explain the following terms 8
  - (i) Signal to noise ratio
  - (ii) Noise factor
  - (iii) Noise figure
  - (iv) Equivalent noise temperature
- (c) Write short note on vestigial sideband transmission. 6
  
3. (a) Explain with the help of circuit diagram and waveforms any one method of FM-generation. 10  
(b) Comment on bandwidth of FM wave. 4  
(c) An AM broadcast transmitter has a carrier power output of 100 kw. Find the total power and sideband power with 75% modulation. 6
  
4. (a) The maximum deviation allowed in an FM broadcast system is 75KHz. 10  
If the modulating signal is a single tone sinusoidal signal of 20 KHz, find the band width of FM signal using carson's rule. What will be the change in band width if modulating signal frequency is doubled? Determine the bandwidth when modulating signal amplitude is doubled.  
(b) Draw the block diagram of Adaptive delta modulation system and explain its operation. What are the advantages of this over delta modulation/ 10
  
5. (a) Explain frequency demodulation system using phase discriminator. Draw the circuit diagram and phasor diagram. 10  
(b) Explain in detail generation and detection of PPM. 10

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6. Write short notes on any **four** of the following :-

**20**

- (a) Electromagnetic frequency spectrum
  - (b) Frequency division multiplexing
  - (c) Sampling theorem
  - (d) Automatic Gain Control.
  - (e) Image Frequency Rejection.
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