

Seat No. : _____

DB-109
December-2013
B.Sc. Sem.-V
ELE-304 : Electronics
(Communication)

Time : 3 Hours]

[Max. Marks : 70

1. (a) What is modulation ? Why it is required ? How many types of modulation are there ? 7

OR

What is amplitude modulation ? Derive the equation of amplitude modulated wave with necessary waveforms.

- (b) What is modulation index ? Derive the equation for modulation index for sinusoidal AM. 7

OR

What do you mean by demodulation ? Explain diagonal peak clipping in detail.

2. (a) What is frequency modulation ? Obtain an expression for the frequency modulated wave, when modulating wave is a sine-wave. Also, draw the necessary waveforms. 8

OR

What is phase modulation ? Derive the expression for phase modulated wave.

- (b) Obtain expressions for frequency spectrum for sinusoidal FM. Also, derive the expression for Average power in sinusoidal FM. 6

OR

Give comparison among the AM, FM and PM, when the modulating signal is a step-waveform. Also, write necessary equations.

3. (a) Discuss basic antenna principles in detail with necessary diagrams. 7

OR

Explain the construction and radiation characteristics of Yagi antenna.

- (b) Explain the construction and radiation characteristics of Ferrite Rod Aerial in brief. 7

OR

Discuss the different terms used for Antenna in detail.

4. (a) Explain the working of Fixed Satellite Service. 7

OR

Explain the space segment and ground segment of the satellite system.

- (b) Mention the different services rendered by Indian Domestic Satellite (INSAT) to the country. 7

OR

What is the satellite communication system ? Explain the working of each component of the satellite communication earth station.

5. Answer in short : 14

- (1) What do you mean by Angle Modulation ?
 - (2) What do you mean by Trapezoidal method ?
 - (3) What is Geostationary Satellite ?
 - (4) In which type of modulation, the modulated power remains equal to carrier power AM or FM ?
 - (5) What is the basic advantage of satellite communication ?
 - (6) What is the primary source of electric power in the space-craft ?
 - (7) A satellite in orbit is subjected to which three forces ?
 - (8) What is half-wave dipole ?
 - (9) Antenna rods are surrounded by _____ and magnetic fields.
 - (10) The directive gain of an antenna is _____ as its length is increased.
 - (11) What is the max. permissible value of modulation index in AM ?
 - (12) What do you mean by Antenna Pattern ?
 - (13) Ferrite material has a high _____ and a high resistivity.
 - (14) Which was the first man-made satellite ?
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