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BIEL-032

01861

DIPLOMA - VIEP ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

Term-End Examination

December, 2013

BIEL-032 : PRINCIPLES OF COMMUNICATION ENGINEERING

Time : 2 Hours *Maximum Marks : 70*

Note : *(i) Attempt **any five** questions in all.*

*(ii) Question No.1 is **compulsory**.*

1. (a) The function of the input transducer in a communication system is : **2**

(i) to transmit the message signal

(ii) to modulate the message signal

(iii) to convert message sound signal into electrical signal

(iv) none

(b) Communication is a process of : **2**

(i) Keeping in touch

(ii) broadcasting

(iii) exchanging information

(iv) entertainment by electronics

(c) The Bandwidth of the AM is : **2**

(i) W_m

(ii) $2W_m$

(iii) $3W_m$

(iv) $W_m/2$

(d) In superhetrodyne receivers and local Oscillator frequency is more than signal frequency because : 2

(i) tracking problem is acute

(ii) ratio of highest to lowest local oscillator frequency is high.

(iii) ratio of local oscillator frequency to signal frequency remains fairly constant.

(iv) All of the above

(e) The VSWR of a transmission line : 2

(i) is greater than or equal to one

(ii) varies from $-\infty$ to ∞

(iii) varies from 0 to 1

(iv) varies from unity to ∞

(f) Antenna commonly used for microwave links are : 2

(i) loop antennas

(ii) log periodic antennas

(iii) Paraboloidal dishes

(iv) rhombic antennas

(g) A low loss transmissin line has : 2

(i) $R << W_L$

(ii) $R >> W_C$

(iii) $R >> W_C$, $G << W_C$

(iv) none of these

2. (a) What is the fundamental limitation in communication system ? Why is modulation of signal required for transmission ? 8

(b) Enumerate the advantages and disadvantages of digital communication. 6

3. (a) An amplitude modulated signal contains a total of 6kW. Calculate the Power being transmitted at the carrier frequency and at each of the sidebands when the percent modulation is 100%. 6

(b) Define : 6
(i) Modulation index for AM
(ii) Deviation ratio and maximum deviation ratio in FM.
(iii) Frequency modulation.

(c) What is the transmission Bandwidth for FM ? 2

4. (a) Sketch the circuit diagram of a ratio detector and explain how it demodulates an FM signal ? How is amplitude limiting achieved ? 7

(b) Draw the block diagram of super hetrodyne Receiver and explain its working. 7

5. (a) Draw the equivalent circuit of transmission-line and explain its parameters. 5

(b) Define the following Transmission line Parameters : 6
(i) Impedance matching
(ii) VSWR
(iii) Reflection coefficient

(c) A quaterwave transmission line section is used to reject an interfering frequency of 100 MHz. Find its approximate length. 3

6. (a) Determine the directivity of an antenna having a radiation efficiency of 80% and a power gain of 40. 5

(b) Compare the characteristics of half wave Dipole and a three element Yagi antenna. 6

(c) What do you mean by the term Polarization ? 3

7. (a) What is the critical frequency for reflection at Vertical incidence if the maximum electron density is $10^6/cm^2$? **4**

(b) Discuss briefly about the Ground wave and space wave propagation. **10**

8. Write short notes on **any four** of the following : **3.5x4=14**

(a) Duct Propagation

(b) Microwave antennas

(c) PLL

(d) Need of AGC

(e) electromagnetic spectrum