DIPLOMA COMPUTER SCIENCE AND ENGINEERING

Term-End Examination

December, 2012

BICS-034 : PRINCIPLES OF COMMUNICATION ENGINEERING

Time : 2 hours   *Maximum Marks : 70*

*Note :   Attempt **any five** questions in all. Question **No. 1** is compulsory. **All** questions carry equal marks.*

Choose the correct answer :   **7x2=14**

1. (a)   Amplitude Modulation is used for broad-casting because :

    (i)   It is more noise immune

    (ii)   It requires less transmitting power

    (iii) Its use avoids receiver complexity

    (iv)   It provides necessary bandwidth for high fidelity

    (b)   A pre - emphasis circuit provides extra noise immunity by :

    (i)   Boosting the Bass (low) frequencies.

    (ii)   Amplifying the higher audio frequencies.

    (iii) Preamplifying the whole audio band.

    (iv)   Converting the phase modulation to FM.

(c) Simultaneous two-way communication is known as :

   (i) Half Duplex

   (ii) Simplex

   (iii) Bi-communication

   (iv) Full Duplex

(d) A shorted quarter wave and an open half wave act like a :

   (i) parallel resonant circuit

   (ii) series resonant circuit

   (iii) tuned resonant circuit

   (iv) either series or parallel resonant circuit

(e) A measure of the mismatch between line and load impedance or the maximum or minimum voltage variations along the line is known as :

   (i) SWR

   (ii) Reflection coefficient

   (iii) Characteristic Impedance

   (iv) VSWR

(f) Tropospheric scatter is used with frequencies in the following range.

   (i) HF   (ii) VHF

   (iii) UHF   (iv) VLF

(g) Which of the following is often used for direction finding ?

    (i)   Loop Antenna

    (ii)   Horn Antenna

    (iii) Telescopic Antenna

    (iv) Microwave Dish Antenna

2. (a) Explain the block-diagram of a electronic communication system.   7

   (b) What do you mean by electromagnetic spectrum and its various bands ?   7

3. (a) Derive an expression for FM wave.   7

   (b) Describe the generation of FM signal using transistorized reactance modulator circuit.   7

4. Explain the working of a superheterodyne receiver with the help of a block diagram and also list its performance/characteristics parameters.   14

5. (a) Describe the working of a Ratio detector circuit.   7

   (b) Discuss various types of losses in transmission lines.   7

6. Explain the structure, radiation pattern and applications of any one of the following antenna. **14**

   (a) Loop Antenna

   (b) Microwave Dish Antenna

7. (a) What is fading and how it affects the performance of a communication system ? 7

   (b) Explain the radiation mechanism in Antenna. 7

8. Write short note on *(any four)* : 4x3½=14

   (a) Skip distance

   (b) Antenna Resistance

   (c) Phased Locked Loop (PLL)

   (d) Characteristic Impedance

   (e) Virtual Height

   (f) Directivity of antenna.

   (g) Modulation