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BIEL-032

02000

DIPLOMA - VIEP ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

Term-End Examination

June, 2013

BIEL-032 : PRINCIPLES OF COMMUNICATION ENGINEERING

Time : 2 Hours *Maximum Marks : 70*

***Note :** Answer **five** questions in all. Question No.1 is **compulsory**. Use of **Scientific** Calculator is **permitted**.*

1. Choose the correct answer. **7x2=14**

(a) Sensitivity of a radio receiver depends on :

(i) Gain of IF and RF

(ii) Bandwidth of IF

(iii) Frequency response of audio amplifier

(iv) Loud speaker

(b) The unit of modulation index is :

(i) hertz

(ii) $(Hz)^{-1}$

(iii) $(Hz)^{-2}$

(iv) no unit

(c) Pre - emphasis circuit is used :

(i) prior to modulation

(ii) prior to detection

(iii) after modulation

(iv) after detection

(d) Characteristic impedance of co - axial cable is :

(i) 0 Ω (ii) 50 Ω

(iii) 377 Ω (iv) $\infty\,\Omega$

(e) Characteristic impedance Z of a lossless transmission line is :

(i) $Z_0 = \left(\frac{1}{LC}\right)$ (ii) $Z_0 = \sqrt{LC}$

(iii) $Z_0 = \left(\frac{C}{L}\right)$ (iv) $Z_0 = \sqrt{\left(\frac{L}{C}\right)}$

(f) One of the following is not an omnidirectional antenna :

(i) Half - wave dipole

(ii) Log - periodic

(iii) Discone

(iv) Marconi

(g) A conductor is said to be perfect if it has :

(i) Zero conductivity

(ii) Infinite conductivity

(iii) Unity conductivity

(iv) Finite conductivity

2. Describe briefly "Communication system" with the help of block diagram. **14**

3. (a) Find the modulation index of an AM wave which has a power content at the carrier of 8 kW and 2kW in each of its sidebands when the carrier is modulated by a simple audiotone. **10**

   (b) Define the terms : **4**

   (i) over modulation

   (ii) under modulation

4. Explain briefly the operation of PLL with the help of block diagram. **14**

5. Define the following *(any four)* : **(4x3.5)=14**

   (a) SWR

   (b) Antenna gain

   (c) Polarization

   (d) Bandwidth

   (e) Deviation ratio

   (f) Reflection coefficient

6. (a) If the inductance of a transmission line is 1.119 μ H/m and the capacitance is 12.3 PF/m, find the time required for the wave to travel 1 m of length down the line. **7**

   (b) A 50 Ω load is being fed from a 72 Ω transmission line. Determine the reflection coefficient. **7**

7. Draw the radiation patter and mention the applications of the following antennas : 14

(a) Ferrite lop antenna

(b) Dish antenna.

8. Write short notes on ***any four*** : (4x3.5)=14

(a) Pre - emphasis and de - emphasis

(b) Need for modulation

(c) Ratio detector

(d) Yagi - uda antenna

(e) Stub matching

(f) Half - duplex