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BICS-034

DIPLOMA – VIEP – COMPUTER SCIENCE AND ENGINEERING (DCSVI)

Term-End Examination

00885

June, 2015

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.*

1. Choose the correct answer from the following : *7×2=14*

(a) Which of the following steps is ***not*** included in the process of reception ?

(i) Decoding

(ii) Encoding

(iii) Storage

(iv) Interpretation

(b) What is the ratio of modulating power to total power at 100 percent modulation ?

(i) 1 : 3

(ii) 1 : 2

(iii) 2 : 3

(iv) None of the above

(c) Indicate the ***false*** statement regarding the Armstrong modulation system.

(i) The system is basically phase not frequency modulation.

(ii) AFC is not needed, as a crystal oscillator is used.

(iii) Frequency multiplication must be used.

(iv) Equalization is necessary.

(d) A low ratio of the ac to the dc load impedance of a diode detected results in

(i) Diagonal clipping

(ii) Poor AGC operation

(iii) –ve peak clipping

(iv) Poor AF response

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

(i) Boosting the bass frequencies

(ii) Amplifying the higher audio frequencies

(iii) Pre-amplifying the whole audio band

(iv) Converting the phase modulation to FM

(f) Zoning is used with a dielectric antenna in order to

(i) Reduce the bulk of the lens

(ii) Increase the bandwidth of the lens

(iii) Permit pin-point focusing

(iv) Correct the curvature of the wavefront from a horn that is too short

(g) For transmission-line load matching over a range of frequencies, it is best to use a

(i) Balun

(ii) Broadband directional coupler

(iii) Double stub

(iv) Single stub of adjustable position

2. (a) Define noise. What is it that is most likely to affect the signal ? 7

(b) Prove that the phase discriminator is an FM demodulator. 7

3. (a) Explain, with the aid of waveforms, how a grid-modulated class C amplifier generates AM. 7

(b) List and discuss the factors influencing the choice of the intermediate frequency for a radio receiver. 7

4. (a) What is the function of the balanced modulator in the Armstrong modulation system ? 7

(b) From the expression for the instantaneous voltage of an AM wave, derive a formula for the rms value of this wave. 7

5. (a) With suitable sketches, do a survey of microwave antennas, comparing their performance. 7

(b) Define the radiation resistance of an antenna. What is the significance of this quantity ? 7

6. (a) What is refraction ? Explain under what circumstances it occurs and what causes it. 7

(b) Define the terms directivity and directional coupling as used with directional couplers, and explain their significance. 7

7. Write brief notes on the following :

(a) Space Wave Propagation 7

(b) Yagi-Uda Antenna 7

8. (a) Discuss the types of losses that may occur with RF transmission lines. In what units are these losses normally given ? 7

(b) Write about the Troposphere scatter propagation in brief. 7