No. of Printed Pages : 4

BIEL-035

DIPLOMA – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

00406

Term-End Examination

December, 2014

BIEL-035 : DIGITAL COMMUNICATION

Time : 2 hours *Maximum Marks : 70*

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

1. Select the correct answer : *7×2=14*

(a) _____ gives maximum probability of error.

(i) ASK

(ii) FSK

(iii) PSK

(iv) DPSK

(b) _____ requires a high signal to noise ratio.

(i) MSK

(ii) GMSK

(iii) QAM

(iv) GFSK

(c) _____ modulation scheme is analog in nature.

(i) PAM

(ii) PCM

(iii) DPCM

(iv) DM

(d) Companding is used in PCM to

(i) obtain uniform SNR.

(ii) increase SNR.

(iii) reduce signal power.

(iv) reduce bandwidth.

(e) The Nyquist sample rate for a maximum analog information frequency of 2 KHz should be minimum

(i) 2 KHz

(ii) 4 KHz

(iii) 8 KHz

(iv) 16 KHz

(f) PAM signal can be detected by

(i) band pass filter

(ii) high pass filter

(iii) band reject filter

(iv) low pass filter

(g) Direct code sequence rate is usually in the range from

(i) 1 Kbps – 100 Kbps

(ii) 1 Mbps – 10 Mbps

(iii) 1 Mbps – 100 Mbps

(iv) 10 Mbps – 1000 Mbps

2. (a) State Shannon-Hartley Law and discuss its implications in transmission of information through a noisy channel.

(b) Define channel capacity. What are the key factors which affect channel capacity ? *2×7=14*

3. What is Quantisation Noise in PCM System ? How does it depend upon the step size ? Explain the working of PCM communication system. *14*

4. Define Delta Modulation in brief. Also define Granular Noise and Slope Overload Error in delta modulation. *14*

5. Explain DPSK transmitter and receiver with necessary signal space diagram. *14*

6. The information in an analog form having maximum frequency 3 KHz is to be transmitted using 16 levels PCM systems. Determine *14*

(a) the maximum number of bits per samples that should be used.

(b) minimum sampling rate.

(c) transmission data rate.

7. Define frequency hopping. What is the difference between fast frequency hopping & slow frequency hopping ? *14*

8. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Entropy

(b) Source Coding

(c) Channel Capacity

(d) CDMA

(e) PN-Sequence

(f) Aperture-Effect