International Islamic University Chittagong (IIUC)
Department of Electronic & Telecommunications Engineering
Final examination

Program: B.Sc. Engineering
Course Code: - ETE-3601/3621
Full Marks-50

Semester- Autumn 2018
Course Title:- Digital Communications
Time- 2.30 Hours

[Answer any two questions from section-A & any three questions from section-B]
[The figures in the right margin indicate full marks]

SECTION-A

Q1. (a) Deduce the expression of normalized signal to quantization noise ratio in dB for any message signal is $(SNR)_{dB} = 4.8 + 6N$. 05

(b) Develop the equation for transmission bandwidth of PCM signal is $B_T \geq NW$. 03

(c) Explain the advantages of DPCM over PCM system. 02

Q2. (a) Define quantization noise? 01

(b) Illustrate, when does slope overload distortion occur in delta modulation occur? 03

(c) Derive and show that, if the numbers of quantization levels are increased the quantization noise is declined. 06

Q3. (a) Differentiate between NRZ and RZ. Also construct waveform for NRZ and RZ for the binary code 0110. 02

(b) Construct the following line coding for the given binary sequence 1011000110. 08

i) Unipolar –RZ
ii) Polar
iii) Bipolar-RZ
iv) Manchester

SECTION-B

Q4. (a) Explain the two modes of operation for an adaptive equalizer. 04

(b) Draw the interpretation of eye pattern and explain its different point from the figure. 03

(c) Explain the different nyquist criteria for zero ISI. 03

Q5. (a) Distinguish between DPSK and QPSK. 02

(b) Construct the constellation diagram and waveform of binary sequences 101100111000 for the following 08

i) PSK
ii) APK
iii) 8-PSK
iv) 4-QAM

Q6. (a) Point out the different multiple accesses and briefly explain them. 04

(b) Distinguish between FDMA and TDMA. 03

(c) Explain the importance of rake receiver in cellular communication system. 03

Q7. (a) Point out the primary advantage of a Spread Spectrum (SS) communication system. Explain Frequency Hopping Spread Spectrum (FHSS) technique with figure. 04

(b) Show the transmitter and receiver diagrams of Direct Sequence Spread Spectrum (DSSS) system. 03

(c) What are the three properties of Pseudo Noise (PN) sequences? Explain the balanced property with example. 03