T.Y. Diploma : Sem. V
[ET/EN/EJ/EX/ED/EI]

Digital Communication

Time: 3 Hrs.] Prelim Question Paper **[Marks : 100**

Instructions : (1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

1. (a) Attempt any **THREE** of the following : **[12]**
(i) List and explain different types of errors in data communication
(ii) List various properties required for line codes.
(iii) Write bandwidth requirement for DPSK, QAM, QPSK, BPSK.
(iv) List and explain different types of frequency hopping.

(b) Attempt any **ONE** of the following : **[6]**
(i) List the different error detecting methods. Describe checksum method with suitable example.
(ii) Define sampling theorem. List types of sampling techniques. Draw the naturally sampled signal.

2. Attempt any **TWO** of the following : **[16]**
(a) List different modulation techniques and explain Amplitude shift keying in detail.
(b) Draw the block diagram of QAM generation system and explain with waveforms.
(c) Describe the North American Digital Multiplexing Hierarchy with neat diagram.

3. Attempt any **FOUR** of the following : **[16]**
(a) Explain slope Overload and granular noise with respect to delta modulation
(b) Compare ASK with FSK
(c) Explain principle of frequency division multiplexing and compare FDM and CDM techniques.
(d) List different advantages of PSK modulation.
(e) Draw the Block diagram of digital communication system and explain in detail.

4. (a) Attempt any **THREE** of the following : **[12]**
(i) What is need for delta modulation? Give its advantages and disadvantages and applications.
(ii) Discuss Shannon's theorem in brief.
(iii) Compare between FHSS and DSSS (4 points)
(iv) What is companding? Draw the companding curves for PCM system.

(b) Attempt any **ONE** of the following : **[6]**
(i) Explain PN sequence generation in detail
(ii) Generate CRC code for data word 1101010011 the divisor is 01011.

5. Attempt any **TWO** of the following : **[16]**
(a) Describe the principle of time division multiplexing with suitable sketch.
(b) Explain FDMA system with schematic diagram. Compare FDMA and TDMA.
(c) Describe the direct sequence spread spectrum techniques with the help of block diagram and state its advantages

6. Attempt any **FOUR** of the following : **[16]**

(a) Give the advantages and disadvantages of digital communication.

(b) Compare QPSK and QASK (4 points)

(c) Describe WDM in details

(d) Explain multiplexing hierarchy (AT & T) for? FDM system

(e) Draw constellation diagram of : (i) 4 QAM (ii) 8 QAM

Paper Discussion Schedule for T.Y. Diploma (Sem. V) – All Subjects

Date	Day	Timing	Centres
14 Nov. 2016	Monday	9 a.m. to 11 a.m.	Dadar
14 Nov. 2016	Monday	12 p.m.to 2 p.m.	Thane

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