

**BT-6/J04****Digital Communication****Paper : ECT-308**

Time : Three Hours]

[Maximum Marks : 75

- Note : (i) Question No. 9 is compulsory.  
 (ii) Attempt ONE question from each of the section.  
 (iii) All questions carry equal marks.

**SECTION—A**

- (a) Explain the working of Transmitter & Receiver of Pulse Position Modulation with their waveforms. 10  
 (b) Derive the expression for bandwidth reqd., for PAM signals. 5
- (a) Explain  $\mu$ -Law and A-law Compressors. 7  
 (b) Explain the working of delta sigma modulator with their block diagram. 8

**SECTION—B**

- (a) What is matched filter ? Give the condition for maximization of output signal to noise ratio. 10  
 (b) The binary data 10101101 is applied to the duobinary system. Construct the precoder O/P and duobinary filter output and received O/P assuming extra bit to be 0. 5
- (a) Explain Tapped delay line equalization where it is practically used ? 7  
 (b) Explain intersymbol interference. Draw the block diagram also. 8

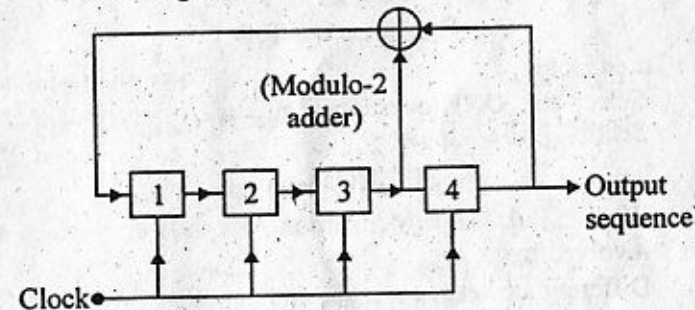
**SECTION—C**

- (a) Explain Gram-Schmidt Orthogonalization Procedure. 8  
 (b) The I/P binary data stream 0010010110 is to be transmitted using DPSK. Show that the reconstruct of DPSK by the technique discussed is independent of the choice of extra bit. 7
- (a) What is the advantage of M-Ary Techniques ? Explain M-Ary FSK.  
 (b) Explain Transmitter and Receiver of MSK with their Block diagram.

**SECTION—D**

- (a) What is the advantage of spread spectrum modulation Technique ? Explain. 5

- (b) For the following four stage feedback shift register. The Initial stage of the register is 1000. Find the output sequence of shift register. 10



- (a) Draw the Transmitter & Receiver of DSSS with coherent binary PSK. 8  
 (b) Draw the Block diagram of CDM Technique. 7

**SECTION—E**

- Write short notes on following (Any THREE) :  $3 \times 5 = 15$   
 (a) Aliasing effect  
 (b) Signal space diagram of BFSK.  
 (c) T1 digital system.  
 (d) Eye-Patterns.