Con. 5465-07. CD-7068

(REVISED COURSE)

(3 Hours) [Total Marks : 100

N.B (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions from remaining **six** questions.
(3) Assume **suitable** data if **required**.

1. (a) Show that entropy is maximum when all the messages are equiprobable. 4
(b) Explain single mode and multimode propogation in optical fiber. 4
(c) Explain the concept of cell splitting and frequency reuse in mobile communication. 4
(d) Compare : 4
(i) Linear block code and Convolution code
(ii) Systematic code and Non-systematic code.
(e) The bit stream 1010101 is to be transmitted using BFSK. Sketch the transmitted waveform. Assume $f_L = f_b$ and $f_H = 2f_b$. 4

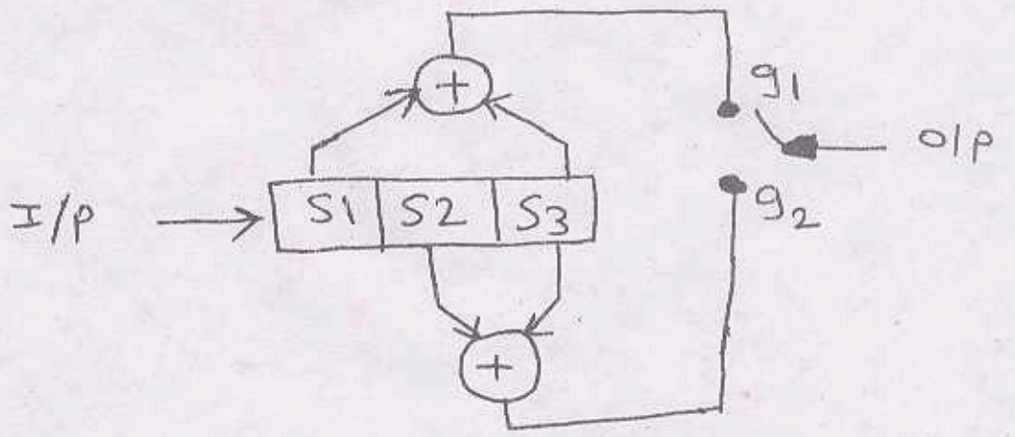
2. (a) With a neat block diagram for transmitter and receiver, explain QASK system to transmitt 16 messages. 10
(b) Explain how does phase continuity occur in Minimum Shift Keying (MSK) system. If b(t) = 0010110101101, sketch V_{msk} (t). Assume m = 3. 10

3. (a) Explain Integrate and Dump receiver and derive an expression for signal to noise ratio. 10
(b) What is matched filter ? Derive error probability of matched filter. 10

4. (a) Explain GSM architecture. 10
(b) Draw the block diagram of Satellite Earth Station and explain its functionality. 10

5. (a) Explain construction and working of PIN Photodiode. 6
(b) Explain any three characteristics of photodetector. 6
(c) Explain the working of two cavity Klystron amplifer. 8

6. (a) Generate (4, 2) cyclic code. 6
(b) Draw the state diagram of the following convolution encoder and obtain the code for the following message bits m = 110010. 6



(c) Two messages with probabilities 0·8 and 0·2 respectively are coded with Huffman code. Calculate the code efficiency, if they are coded by considering :— 8
(i) One message at a time
(ii) Two messages at a time.

7. Write short notes on (any **four**) :— 20
(a) Keppler's laws
(b) Syndrome test
(c) Duobinary encoder
(d) Shannon-Hartley theorem
(e) DPSK transmitter.