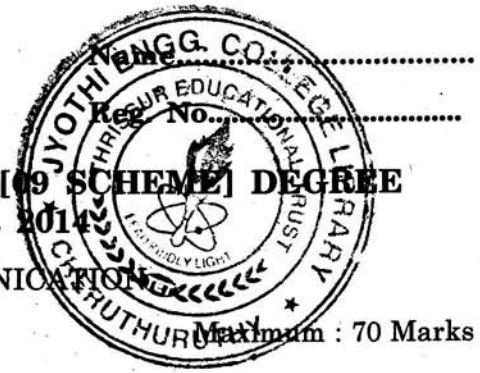


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**FIFTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE
EXAMINATION, NOVEMBER 2014**

EC/PTEC 09 504—DIGITAL COMMUNICATION

Time : Three Hours

Maximum : 70 Marks

Part A

*Answer all questions.
Each question carries 2 marks.*

1. What is a PWM signal ?
2. What are bandpass signals ?
3. What is ISI ?
4. What is a spread spectrum signal ?
5. Define MSK.

(5 × 2 = 10 marks)

Part B

*Answer any four questions.
Each question carries 5 marks.*

1. Explain non-uniform quantisation procedures.
2. Explain the principle of DPCM and ADM.
3. Write notes on eye diagram.
4. Explain the working of a matched filter.
5. Discuss the terms : Likelihood functions, processing gain, Jamming margin.
6. Binary data is transmitted over a channel with a usable bandwidth of 10 MHz at a rate of 4.8 Mbps using ASK signalling. The carrier amplitude at the receiver antenna is 1 mV and the noise power spectral density at the receiver input is 10^{-15} W/Hz. Find the error probability of a coherent receiver.

(4 × 5 = 20 marks)

Part C

*Answer all questions.
Each question carries 10 marks.*

1. Derive the expression for signal to noise ratio of a DM system.

Or

2. Derive the expression for power spectral density of any two NRZ line coding schemes. Discuss on the expressions derived.

Turn over

3. Prove that Nyquist second criterion for zero ISI is duobinary.

Or

4. Explain the working of :

(i) Transversal equaliser.

(ii) Decision feedback equaliser.

5. Discuss, in detail, direct sequence spread spectrum system.

Or

6. Derive the expression for threshold and bit error probability of a matched filter.

7. Derive the expressions for bit error probability of the following coherent receivers :

ASK, FSK and PSK.

Or

8. (a) Derive the bit error probability of a MSK receiver.

(b) Compare the performance of various digital modulation schemes.

(4 × 10 = 40 marks)