

Reg. No. : 

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Question Paper Code : 30946**

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fifth Semester

Electronics and Communication Engineering

EC 2301 — DIGITAL COMMUNICATION

(Regulation 2008)

(Common to PTEC 2301 — Digital Communication for BE. (Part-Time) Fourth Semester — Electronics and Communication Engineering — Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write down any four techniques to improve the BER of a communication system.
2. Define basis set.
3. State sampling theorem for low pass signals.
4. What is meant by quantization?
5. What is line coding?
6. Define code rate of a block code.
7. A 64 kbps binary PCM polar NRZ signal is passed through a communication system with a raised-cosine filter with roll-off factor 0.25. Find the bandwidth of the filtered PCM signal.
8. List down any two applications of eye pattern.
9. Mention the drawbacks of amplitude shift keying.
10. What are coherent system?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the various analog pulse communication system describing their advantages and drawbacks. (8)  
(ii) Describe how channels can be classified and briefly explain each. (8)
- Or
- (b) (i) Describe the elements of a digital communication system. (8)  
(ii) Explain the mathematical models of various communication channels. (8)

12. (a) Explain the sub-band coding and linear predictor coding.

Or

(b) (i) Explain the PCM and derive the SNR expression. (8)

(ii) Explain the DM and derive the expression for quantisation noise. (8)

13. (a) Describe the steps involved in the generation of linear block codes. Define and explain the properties of syndrome. (16)

Or

(b) (i) Explain how convolutional codes can be generated. Illustrate with an example. (8)

(ii) For a convolutional encoder of constraint length 3 and rate  $\frac{1}{2}$ , obtain the encoded output for the input message 10011. (8)

14. (a) Explain modified duo-binary signalling scheme without and with precoder.

Or

(b) Explain the working of a correlator type receiving filter.

15. (a) Derive the expressions for bit error probability of the following receivers :

(i) Coherent ASK (8)

(ii) Non-coherent FSK. (8)

Or

(b) Derive the expressions for the bit error probability of the following receivers

(i) QPSK (8)

(ii) Coherent PSK. (8)