



RAN - 2103000206030066

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**T. Y. B. Sc. (Sem. - VI) Examination September - 2023**

**Physics - Elective Course - I**

**Modern Digital and Analog Communication System - II**

**[ Total Marks: 50**

**सूचना : / Instructions**

(1)

नीचे दशावलि निशानीवाणी विगतो उत्तरवही पर अवश्य लभवी.  
**Fill up strictly the details of signs on your answer book**

Name of the Examination:

T. Y. B. Sc. (Sem. - VI)

Name of the Subject :

Physics - Elective Course - I - Modern Digital and Analog  
Communication System - II

Subject Code No.: 2103000206030066

Seat No.:

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Student's Signature
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- (2) Draw neat diagrams wherever necessary.  
(3) Symbols used in the paper have their usual meaning.  
(4) Question 1 is compulsory and figures to the right indicate full marks of the question.

**Q. 1. Answer the following questions in short: (10)**

- In the on-off or bipolar case a 0 is transmitted by?
- Full form of ISDN?
- The autocorrelation function  $R_x(t, t_l)$  also known as?
- Diagram of M-ary communication system.
- Full form of PAM.
- What is Simplex?
- What is 'Bay' and 'Bayes' decision?
- What is noise amplification?
- How many function of a receiver or regenerative repeater performs?
- Full form of MMSE method.

**Q. 2. A. Write any one of the following. (06)**

- Explain PSD (Polar Spectral Density) of On-Off Signalling.
- Explain PSD (Polar Spectral Density) of Bipolar signalling.

**B. Write any one of the following. (04)**

1. Determine the Pulse transmission rate in terms of transmission bandwidth  $B_t$  and the roll-off factor  $r$ . Assume a scheme using Nyquist criterion.
2. Explain Nyquist first Criterion for zero ISI.

**Q. 3. A. Write any one of the following. (06)**

1. Explain block diagram of Regenerative repeater.
2. Describe EYE DIAGRAMS as an important tool.

**B. Write any one of the following. (04)**

1. The data stream 1010101000000111 is fed to scrambler find the scrambler output.
2. Explain Differential PSK.

**Q. 4. A. Write any one of the following. (06)**

1. Explain properties of Gaussian Random Process.
2. Explain Geometric Representation of White noise process.

**B. Write any one of the following. (04)**

1. Explain frequency Shift keying.
2. Describe White Gaussian Noise.

**Q. 5. A. Write any one of the following. (06)**

1. Describe general expression for error probability of optimum receiver.
2. Explain Geometric representations.

**B. Write any one of the following. (04)**

1. Describe Differentially Coherent PSK.
2. Explain Amplitude Shift Keying.