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RAN-2103000206030066

B.Sc. (Sem. VI) Examination March - 2025

Physics (Elective - 1) Modern Digital and

Analog Communication System - (Paper - I)

[Total Marks: 50

સૂચના : / Instructions

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નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:

B.Sc. (Sem. VI)

Name of the Subject :

**Physics (Elective - 1) Modern Digital and Analog
Communication System - II (Paper - I)**

Subject Code No.: **2103000206030066**

Seat No.:

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Student's Signature

Q.1 Answer the following questions in brief:

10

1. MAP stands for
2. In the polar signaling case a 1 is transmitted by?
3. Full form of ISDN.
4. Full form of PAM.
5. What is transparent line code?
6. Level-crossing ambiguity shows in an eye diagram.
7. The auto correlation function $R_x(t, t_1)$ also known as
8. Write any one properties of Gaussian Random Process.
9. What is Maximum likelihood receiver?
10. Simplex is also known as

Q.2. (A) Attempt any one of the following in details :

07

1. Explain Nyquist 1st Criterion for zero ISI.
2. Draw the fundamental building block of digital communication system and explain briefly.

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- (B) Attempt any one of the following :** **03**
1. Explain intersymbol interference and effect.
 2. Determine the pulse transmission rate in terms of the transmission bandwidth B_T and the roll-off factor r . Assume a scheme using Nyquist's first criterion.
- Q.3. (A) Attempt any one of the following in details :** **07**
1. Explain Time extracting and time jitter in detail..
 2. What is scrambling? Also explain Scrambler and Descrambler.
- (B) Attempt any one of the following :** **03**
1. Explain Block diagram of regenerative repeater.
 2. Explain M-ary Baseband signaling for higher data rate.
- Q.4 (A) Attempt any one of the following in details :** **06**
1. Explain Geometrical Representation of white Gaussian noise process.
 2. Explain properties of a Gaussian random process.
- (B) Attempt any one of the following :** **04**
1. Explain Binary ASK.
 2. Explain Binary Threshold Detection.
- Q.5. (A) Attempt any one of the following in details :** **06**
1. Explain Amplitude shift keying.
 2. Describe the general expression for error probability of optimum receiver.
- (B) Attempt any one of the following :** **04**
1. Explain white Gaussian Noise.
 2. Write short note on Differential Coherent PSK.
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