

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 103
Supplementary Winter Examination – 2023**

Branch: Electronics Engineering

Course: B. Tech

Subject with Subject Code: - Digital communication BTEXPE603A_Y21

Date:- 20/01/2024

Sem.:- VI

Marks: 60

Time:3 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q. 1 Solve Any Two of the following.

12

- A) A TV signal with a bandwidth of 4.2 MHz is transmitted using binary PCM. The number of quantization levels is 512. Calculate :

L3 6

- 1) Code word length
- 2) Transmission bandwidth
- 3) Final bit rate
- 4) Output signal to quantization noise ratio.

- B) What is companding? Explain its need in communication system.

L2 6

- C) Explain the basic digital communication system with neat block diagram.

L1 6

Q.2 Solve Any Two of the following.

12

- A) Explain the working of DEPSK system with the help of transmitter receiver block diagrams. Also state the advantages and disadvantages of the same.

L2 6

- B) Write a note on random processes. Give its classification.

L1 6

- C) Write a note on Power spectral density. What are its properties.

L3 6

Q. 3 Solve Any Two of the following.

12

- A) Explain the working of BPSK receiver with neat block diagram.

L2 6

- B) Explain the working of optimum receiver system with neat block diagram. Also obtain equation for probability of error for the same.

L2 6

- C) What are the cause and effects of ISI? Explain Eye diagram.

L2 6

Q.4 Solve Any Two of the following. 12

- | | | |
|--|----|---|
| A) Write a note on narrowband noise. Give representation of narrowband noise in terms of in phase & quadrature components. | L2 | 6 |
| B) Explain T-Carrier system. | L1 | 6 |
| C) What is Matched Filter? Explain its working with the help of neat block diagram. | L2 | 6 |

Q. 5 Solve Any Two of the following. 12

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|---|----|---|
| A) Explain the concept of Jammers. | L1 | 6 |
| B) Explain the features and applications of wireless telephony. | L1 | 6 |
| C) Differentiate between Frequency-Hopping Spread Spectrum technique and Direct Sequence Spread Spectrum technique. | L3 | 6 |

*** End ***