

# DD-755

## M. Sc. (Fourth Semester) EXAMINATION, 2020

PHYSICS

Paper Fourth (B)

[Electronics—II (Communication)]

*Time : Three Hours*

*Maximum Marks : 80*

**Note :** Attempt all the *five* questions. *One* question from each Units is compulsory. All questions carry equal marks.

### Unit—I

1. (a) What is Pulse Amplitude Modulation (PAM) ?  
Explain PAM channel BE for PAM signal. 8
- (b) State and prove sampling theorem for low pass signal. 8

*Or*

- (a) Describe the sample and hold circuit for signal recovery and explain the signal recovery through holding. 8
- (b) Explain natural sampling. 8

**Unit—II**

2. Discuss Pulse Code Modulation (PCM). Explain the differential Pulse Code Modulation technique. 16

*Or*

Explain the Coherent Binary Frequency Shift Keying (BFSK). 16

**Unit—III**

3. (a) What do you mean by noise in communication system ? Explain frequency domain representation of noise. 8
- (b) What is the effect of using R-C low pass filter before a demodulator in linear filtering ? Explain it. 8

*Or*

- (a) Explain the quadrature component of noise. 8
- (b) Explain the power spectral density of  $n_c(t)$ ,  $n_s(t)$  and their time derivatives. 8

**Unit—IV**

4. (a) Calculate the error probability for BPSK. 8
- (b) What is coherent reception co-relation ? 8

*Or*

- (a) Explain Non-coherent detection on FSK. 8
- (b) Explain the matched filter and calculate the probability of error of matched filter. 8

**Unit—V**

5. (a) Discuss the PCM transmission with suitable block diagram. 8

- (b) Calculate the quantization noise and output signal power in PCM transmission. 8

*Or*

- (a) Explain the working of Delta Modulation System. 8  
(b) Discuss the DM output signal to quantization noise ratio and describe the output signal to noise ratio in delta modulation. 8

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