SHIVAJI COLLEGE (D.U).

Assignment on Communication System

B.Sc. Physics (Honours) Semester-VI

Total Marks : 20

Last date of submission : ***03 April, 2024*** Dt, 20.03.2024

Instructions:

- *All the questions carry equal marks.*
- *Answer all the questions.*

1.**A**.(i) What is the need of Modulation? Explain Amplitude Modulation, Frequency Modulation, and Phase Modulation with a suitable diagram/waveform.

(ii) Explain the generation of Single Sideband (SSB) variant of Amplitude Modulation.

OR

B.(i) Explain the generation of FM wave using VCO with a diagram.

(ii) Describe a Superheterodyne receiver with the help of a block diagram and explain the function of each block.

2. (a) State the sampling theorem and prove it. Explain Pulse Amplitude Modulation (PAM) with a suitable waveform.

(b) What is the advantage of Flat Top Sampling over Natural Sampling? Write a short note on Time Division Multiplexing (TDM) and Frequency Division Multiplexing (FDM).

3. (a) What is the need of digital Communication? Explain Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK) and Phase Shift Keying (PSK).

(b) What is the need of Satellite Communication? Write a short note on Geosynchronous and Geostationary satellites.

4. Suppose that on an AM signal, the $V_{max\ (p\text{-}p)}$ value read from the graticule on the oscilloscope screen is 6.2 divisions and $V_{min(\ p\text{-}p)}$ is 0.5 divisions.

(i) What is the modulation index (m)?

(ii) Calculate V_c, V_m, and m if the vertical scale is 2.5 V per division.

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20/3/24