Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

EVENING

27 DEC 2022

[Total No. of Questions: 09] [Total No. of Pages: 2]

Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)
Semester: 5
Name of Subject: Analog Communication Systems
Subject Code: PCEC-110
Paper ID: 16417
Scientific calculator is Allowed

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1.

a) Differentiate between the terms ISB and VSB..

b) Justify, the role of PLL in FM detection.

c) Describe briefly about the AM receiver parameters: fidelity & selectivity.

d) Write the significance of carrier suppression in analog communication system.

e) Draw the block diagram of high level AM modulator and low level AM modulator.

f) A 50 kW carrier is to be modulated to a level of (i) 80% (ii) 10%. What is the total sideband power in each case?

Part – B **[Marks: 04 each]**

Q2. Describe briefly the working of balanced modulator using circuit diagram and waveforms.

Q3. Compare Amplitude modulation and Frequency modulation.

Q4. Explain in detail the concept of pulse modulation and demodulation.

Q5. An AM wave is represented by the expression:
$v = 5 (1 + 0.6 \cos 6280 t) \sin 211 \times 10^4 t$ volts
(i) What are the minimum and maximum amplitudes of the AM wave?

(ii) What frequency components are contained in the modulated wave and what is the amplitude of each component?

Q6. Differentiate between narrowband and Wideband FM.

Q7. Explain the working of superhetrodyne receiver using block diagram and waveforms.

Part – C **[Marks: 12 each]**

Q8. Explain in detail the elements of communication system with the help of neat and Labelled block diagram.

OR

Discuss the following:

(a) Tuned radio frequency receiver

(b) Product Modulator.

Q9. Explain in detail the Pulse Amplitude Modulation. Also discuss its types.

OR

Derive an expression for the generation of FM by indirect method: Armstrong method. Also state the noise triangle.

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