Total No. of Questions : 10]

SEAT No. :

PF-12718

[Total No. of Pages : 3

[6625]-254

S.E. (Electronics/E&TC Engineering/Electronics and Computer/VLSI Design and Technology)

PCC-251-ETC : COMMUNICATION ENGINEERING

(2024 Pattern) (Semester - IV)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8 and Q9 or Q10.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***
4) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Define Communication System. Draw and explain block diagram of Communication System. **[6]**

b) An amplifier operates over the frequency range from 18 MHz to 20 MHz and has an input resistance of 10 kΩ. Calculate the rms noise voltage at the input if the ambient temperature is 27°C. **[4]**

c) Explain the necessity and role of regenerative repeaters in digital communication system. **[4]**

OR

Q2) a) A receiver connected to an antenna whose resistance is 50 Ω has an equivalent noise resistance of 30 Ω. Calculate the receiver's noise figure in decibels and its equivalent noise temperature. **[6]**

b) Compare Energy Spectral Density (ESD) with Power Spectral Density (PSD). **[4]**

c) Define the following terms **[4]**

i) Signal to noise ratio

ii) Noise figure of a receiver.

P.T.O.

Q3) a) Define Modulation. Explain the Modulation Techniques and the need of Modulation in communication systems. **[7]**

b) Compare Double Sideband (DSB), Single Sideband (SSB) and Vestigial (VSB). **[7]**

OR

Q4) a) Explain the block diagram of Super heterodyne Receiver in detail. **[7]**

b) Calculate the percentage power saving when the carrier and one of the sidebands are suppressed in an AM wave modulated to a depth of (i) 100 percent (ii) 50 percent. **[7]**

Q5) a) What are the methods of Frequency Modulation (FM) Generation? Explain any one in detail. **[6]**

b) Differentiate between Narrowband Frequency Modulation (NBFM) and Wideband Frequency Modulation (WBFM). **[4]**

c) A carrier is frequency modulated with a sinusoidal signal of 2 KHz resulting in frequency deviation of 5 KHz. Find Bandwidth & modulation index of modulated wave. **[4]**

OR

Q6) a) Explain FM Armstrong method with neat block diagram. **[6]**

b) Compare Frequency Modulation and Phase Modulation. **[4]**

c) What is the bandwidth required for a frequency modulated signal in which the modulating frequency is 2 KHz and maximum frequency deviation is 10 KHz and modulation index? **[4]**

MODULATION INDEX	SIDEBANDS
1	3
2	4
3	6
4	7
5	8 (max)

Q7) a) Define Sampling. Explain the Types of Sampling with neat sketch. **[7]**

b) What is mean by Data Formats and Draw the following data formats for bit stream 10110100101 i) Unipolar RZ ii) Unipolar NRZ iii) Polar RZ iv) Polar NRZ v) AMI (Alternative mark Inversion) vi) Split Phase Manchester. **[7]**

OR

SPPUQuestionPapers.com CEGP019671 103.157.122.163 20/06/2026 09:42:50 in-pnq-static-163-122-157-103

Q8) a) Compare Pulse Amplitude Modulation (PAM), Pulse Width Modulation (PWM) and Pulse Position Modulation (PPM). **[7]**

b) Draw and Explain Block diagram of Adaptive Delta Modulation (ADM) and state the advantages of ADM over DM. **[7]**

Q9) a) Explain the working Principle of Two-Way Radio Communication System (Walkie-Talkie). **[5]**

b) Draw and Explain the functional blocks of an Aviation Communication system. **[5]**

c) State any four real world applications of Two-Way Communication System. **[4]**

OR

Q10)a) Draw and Explain Block diagram of Basic Television System. **[5]**

b) Explain the functional blocks of Marine Communication System. **[5]**

c) Describe the use of communication systems in the following applications. **[4]**

i) Military and Defense Services

ii) Transportation and Navigation

SPPUQuestionPapers.com
CEGP019671
103.157.122.163 20/06/2026 09:42:50 in-pnq-static-163-122-157-103