

B.Sc. Semester-VI Examination, 2022-23**ELECTRONICS [Honours]**

Course ID : 61711 Course Code : SH/ELC/601/C-13(T)

Course Title : Communication Electronics

Time : 1 Hour 15 Minutes

Full Marks : 25

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*1. Answer any **three** of the following questions:

1×3=3

- For an ideal device what is the value of the noise figure (F)?
- Name various types of modulation in communication.
- What is the importance of Single Side-Band Suppressed Carrier (SSBSC) signal in communication?
- What is Sampling Theorem?
- What is Multiplexing in communication?
- What is Digital Modulation?

2. Answer any **three** of the following questions.:

2×3=6

- Define Noise Figure (F).
- What is the need of modulation in communication?
- What is Pulse Code Modulation (PCM)?
- Define Bandwidth (BW) in case of AM wave propagation. What is its numerical value?
- Sketch the waveform of Frequency Shift Keying (FSK) signal.
- Draw the circuit diagram of an Amplitude Demodulator.

3. Answer any **two** of the following questions:

5×2=10

- Obtain an expression for total transmitted power of an AM wave when carrier wave power (P_c) and depth of modulation (m_a) are given. What are the sidebands in AM wave propagation?
4+1=5
- Draw the block diagram of a 'Super-Heterodyne' AM Radio Receiver and explain briefly the function of any four (4) blocks. 5

c) What is Frequency Modulation? Derive the expression for Frequency Modulation Index (m_f) in case of FM wave generation. $1+4=5$

d) What is an 'Intermediate Frequency' (IF) amplifier? Where is it used? For an AM and FM radio receiver what are its standard values? $2+1+2=5$

4. Answer any **one** of the following questions:

$$6 \times 1 = 6$$

a) Draw the block diagram of a 'FM transmitter' and explain the function of each block. 6

b) What are the principal characteristics of a radio receiver? Give a brief description of them. Describe how a PCM (Pulse Code Modulation) signal is constructed from an Analog signal.

$$2+2+2=6$$

c) What is digital modulation? How many types of digital modulation are there? Name them. When a carrier wave modulated with these types of signal how many types of resultant waves will be produced? Name them. Draw the sketch of any one of them. $1+1+1+3=6$