H.T.No. | | | | | | | | | | |

Code No: EC3521 **SRGEC-R20**

II B.Tech II Semester Regular Examinations, July 2022

FUNDAMENTALS OF COMMUNICATION SYSTEMS

(Open Elective-I)

Time: 3 Hours **Max. Marks: 70**

Note: Answer one question from each unit.
All questions carry equal marks.

5 × 14 = 70M

UNIT-I

1. a) List the features of telephone channels and explain about twisted pair cables. (7M)

   b) Classify different electronic communication systems based on the technique of transmission and explain. (7M)

(OR)

2. a) Distinguish Baseband and Band pass signals. (7M)

   b) What is the importance of bandwidth in the communication system and communication channel? (7M)

UNIT-II

3. a) Write the principle involved in FDM with a neat sketch. (7M)

   b) Explain about information capacity theorem. (7M)

(OR)

4. a) Calculate wavelength of the signal if the frequency of the input signal is

   (i) 1KHz (ii) 3KHz (7M)

   b) What is meant by multiplexing and explain the importance of multiplexing in communication systems. (7M)

UNIT-III

5. a) An AM broadcast radio transfer radiates 10 kW of power if modulation percentage is 60. Calculate how much of this the carrier power is. (7M)

   b) Prove that in AM, maximum power transmitted by an antenna is 1.5 times the carrier power. (7M)

(OR)

6. a) Represent DSB-SC modulated wave in time domain. (7M)

   b) A certain transmitter (AM) is radiating 132 kW when a certain audio sine wave is modulating it to a depth of 80%.Calculate carrier power and sideband power. (7M)

UNIT-IV

7. a) Explain Constant Average Power, Transmission bandwidth of FM Wave. (7M)

   b) What is the modulation index of an FM signal having a carrier swing of 120KHz when the modulating signal has a frequency of 8KHz? (7M)

(OR)

8. a) Define frequency modulation and explain the physical appearance of frequency modulated waves. (7M)

   b) Calculate modulation index of FM if deviation frequency is 20KHz and modulating frequency if 2KHz. (7M)

UNIT-V

9. a) Illustrate and describe the types of quantizer. Describe the midtread and midrise type of uniform quantizer with suitable diagrams. (7M)

   b) Discuss in detail about Second-Generation cellular telephone. (7M)

(OR)

10. a) Explain the generation of frequency shift keying modulated signals. (8M)

    b) A television signal having a bandwidth of 10.2M Hz is transmitted using binary PCM system and the number of quantization levels is 512. Determine the

       (i) Code word length

       (ii) Transmission bandwidth

       (iii) Final bit rate (6M)