

**B.TECH SEM – IV (2007 COURSE) (COMPUTER ENGG.) :**

**SUMMER - 2018**

**SUBJECT: DATA COMMUNICATION SYSTEMS**

Day : **Tuesday**  
Date : **05/06/2018**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks: 80

**S-2018-2611**

**N. B. :**

- 1) **Q. No.1 and Q. No.5 are COMPULSORY.** Out of the remaining attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the section should be written in **SEPARATE** answer book.
- 4) Use of non- programmable electronic **CALCULATOR** is allowed.
- 5) Assume suitable data, if necessary.

**SECTION-I**

- Q.1**
- a) What is Bandwidth? How is Bandwidth related to the data carrying capacity of transmission channel? [05]
  - b) With the help of suitable expression explain the difference between FM and PM waves [05]
  - c) What are the major disadvantages in NRZ encoding? How is it solved in other techniques? [04]
- Q.2**
- a) With schematic diagram explain the operation of basic communication system. [07]
  - b) What do you mean by Synchronous and Asynchronous data transmission? What are the advantages and disadvantages? [06]
- Q.3**
- a) Compare Frequency Modulation and Amplitude Modulation in communication system. Discuss the methods of generating FM [07]
  - b) Explain the working of Superhetrodyne radio receiver with neat block diagram? [06]
- Q.4**
- a) Define CRC coding? If the frame is 110101011 and generator is  $x^4 + x + 1$ . What would be the transmitted frame? [07]
  - b) State and explain Shannon's theorem of channel capacity? [06]

**SECTION-II**

- Q.5**
- a) Compare between AM and ASK. [05]
  - b) Explain the concept of Geostationary satellite? [05]
  - c) Write a short note on: Roaming. [04]
- Q.6**
- a) Explain the working of Binary Frequency Shift Keying with the help of relevant expressions, waveforms and power density spectrum. [07]
  - b) Explain the principle of multiple modulations done by QPSK? [06]
- Q.7**
- a) List and explain various losses in fiber optic communication? [07]
  - b) Write down properties of twisted pair and co-axial cable media? [06]
- Q.8**
- a) Draw and explain the general block diagram of cell phone? [07]
  - b) Explain in detail principles and application of GPS. [06]

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