Seventh Semester B.Tech. Degree Examination, November 2017
(2013 Scheme)
13.704 : COMMUNICATION SYSTEMS (E)

Time : 3 Hours
Max. Marks : 100

PART – A

Answer all questions.
1. What is meant by over modulation ?
2. The antenna current of an AM transmitter modulated to a depth of 60% is 20A. Antenna current becomes 22A when it is simultaneously modulated by another sinusoidal signal. Calculate the effective modulation index.
3. Define selectivity and sensitivity of a radio receiver.
4. Obtain the mathematical expression of frequency modulated signal.
5. State and explain sampling theorem.
6. What are the factors to be considered in the selection of IF ?
8. How is colour transmitted in colour TV system ?
9. List out the two-way mobile communication services.
10. Explain the basic concepts of CDMA.  

(\(10 \times 2=20\) Marks)

PART – B

Answer one full question from each Module.

Module – I

11. a) What are the applications of low level AM transmitters ? With the help of a block diagram explain its operation in detail.

b) A sinusoidal carrier voltage with frequency 10 MHz and 40V amplitude is amplitude modulated by a sinusoidal voltage of 10 kHz to a depth of 40%.
   i) Sketch the frequency amplitude spectrum
   ii) Find the average power of each spectral component. Derive the expressions you use.

OR

P.T.O.
12. a) Explain the different types of amplitude modulated systems.
    b) What are the advantages and disadvantages of SSB systems?
    c) With the help of block schematics, compare the performance of TRF AM receiver with superheterodyne receiver.

Module – II

13. a) With the help of a block diagram explain the operation of an FM receiver.
    b) Describe the working of a balanced slope detector.

OR

14. a) With the help of necessary diagrams, explain the processes in pulse code modulation.
    b) Give the overview of a PLCC system.

Module – III

15. a) With a neat block diagram explain the operation of a monochrome TV transmitter.
    b) Explain the need of synchronizing, blanking and equalizing pulses in the composite TV signal.

OR

16. a) Draw the block diagram of a pulsed radar system. Explain the functions of each block.
    b) With the help of a sketch, describe the operation of a TV picture tube.

Module – IV

17. a) Explain the concepts of:
     i) Cellular approach
     ii) Frequency reuse
     iii) Cell splitting.
    b) Describe the components of a cellular system layout.

OR

18. a) With the help of a block diagram explain the GSM architecture.
    b) Give the overview of PCSS. What are the advantages and disadvantages?

(4×20=80 Marks)