333552(33)

B. E. (Fifth Semester) Examination, April-May/ Nov.-Dec. 2020

(New Scheme)

(IT Engg. Branch)

PRINCIPLES of COMMUNICATION SYSTEM

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

*Note : Attempt all questions. Part (a) of each unit is compulsory and carry 2 marks. Attempt any **two** part from (b), (o) and (d) of each question.*

Unit-I

1. (a) Define modulation index.   2

(b) Compare the AM-FC, DSB-SC and SSB-SC on the following points (i) frequency spectrum, (ii) Band-width, (iii) Power, (iv) Complexity, (v) Applications. 7

(c) The power context of the carrier of AM wave is 5 kW. Determine the power context of each side band and the total power transmitted when the carrier is modulated upto 70%. 7

(d) Explain FDM technique using block diagram. 7

Unit-II

2. (a) Define frequency deviation in FM signal. 2

(b) Find the permissible range in maximum modulation index for : 7

   (i) Commercial FM which has 30 Hz to 15 kHz modulating frequencies.

   (ii) Narrow band FM system that allows maximum deviation of 10 kHz & 100 Hz to 3 kHz modulating frequencies.

(c) Give the relationship between frequency modulation and phase modulation. 7

(d) Discuss on Balanced slope detector for FM demodulation. 7

Unit-III

3. (a) Determine the sampling rate for a signal 2

$$v(f) = 2\cos(500\,\pi t) - \cos 1000\,\pi t$$

(b) Explain the process of quantization in detail. 7

(c) State and prove the sampling theorem. 7

(d) Explain generation and detection of PPM. 7

Unit-IV

4. (a) List different types of digital modulation schemes. 2

(b) Give the comparison between ASK, FSK and PSK. 7

(c) Derive expression for PSK signal. Explain recovery of base and signal from PSK signal. 7

(d) Explain working of DPSK system. 7

Unit-V

5. (a) Define Numerical Aperture for optical fiber.   2

    (b) Draw block diagram of satellite communication system. Explain each block in brief.   7

    (c) Explain function of transponders in satellite system.   7

    (d) Describe different losses in optical fiber.   7