Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

EX-601 (GS)

B.E. VI Semester

Examination, November 2019

Grading System (GS)

Communication Engineering

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Describe the modes of operation for Gunn diode.
   b) What are parametric devices? Explain the working of a parametric up converter.

2. Write equation of Fourier transform and Inverse Fourier transform. Write any five properties of Fourier transform.

3. What is Central Limit theorem? Consider any two functions and find their joint PDF.

4. a) Explain the generation of DSB-SC modulation.
   b) Define:
      i) Modulation index
      ii) VSB modulation

5. a) Draw the block diagram of satellite link and explain.
   b) Discuss briefly the multiple access techniques used in satellite communications.

6. a) For an AM-DSBFC modulator with a carrier frequency $f_c = 100$kHz and a minimum modulating signal frequency $f_m(\text{max.}) = 10$kHz. Determine:
      i) Frequency limits for upper and lower side bands
      ii) Bandwidth
      iii) Upper and lower side frequencies produced when the modulating signals is a single frequency 3kHz tone.
   b) Determine carrier swing maximum and minimum frequencies attained and the modulation index of FM signal generated by FM at 101.6MHz carrier with a 8kHz sine wave causing a frequency deviation of 40kHz.

7. What are the limitations of TRF receiver? Explain the necessity of heterodyning. Explain superheterodyne receiver with the help of diagram.

8. Write short notes on any two of the followings
   a) Magnetrons
   b) Laser
   c) Satellite communication
   d) Travelling wave tube

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