

[2]

Roll No .....

OR

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**EX-601****B.E. VI Semester**

Examination, June 2013

**Communication Engineering***Time : Three Hours***Maximum Marks : 100****Minimum Pass Marks :35**

**Note:** Assume necessary data if missing.  
All the questions are equal marks.

1. a) What is Random variable? Explain all types of Random variables. Write the properties of each using examples? 10

b) Consider a Square wave of duration-T to T, find the Fourier transform of it? Assume amplitude is unity. 10

OR

2. a) What is power decibel scale? Write the procedure to make it without using calculator? Also write about dbm, dbw, dbmw, dbv? 10

b) Write and explain the Gaussian density function? How this function is helpful in making Rician PDF? 10

3. a) Describe the working of the single sideband modulation with the help of necessary equations and sketches? 10

b) What are the differences between narrowband FM and wideband FM? Explain the different approaches to generate them? 10

EX-601

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4. a) Draw the spectrum of Vestigial sideband modulation and explain the bandwidth, capacity, sideband power, information in sideband? 10

b) What is pre-emphasis and de-emphasis. Draw their diagrams and explain them in details? Also write their advantages and disadvantages? 10

5. a) What are the drawbacks of TRF receiver? Explain any one strong method to solve the problems of TRF receiver? 10

b) Explain the different factors that affect the selection of RF amplifier? What is the need of multiple RF amplifiers in RF section? 10

OR

6. a) Explain the Superheterodyne receiver with the help of neat sketches and derivations to generate 91.2 MHz. 10

b) Draw and explain the different Detectors used in communication receivers? 10

7. a) Differentiate with the help of neat diagram between sampling and quantization. Write and explain the need of non-uniform quantizer? Also derive the formula of signal-to-quantizing-noise ratio in this case? 10

b) In a binary PCM system, the output signal-to- quantizing-noise ratio is to be held to a minimum of 25 dB. Determine the number of required levels and find the corresponding output signal-to- quantizing-noise ratio? 10

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[3]

OR

8. a) Sketch the QAM waveform for the sequences 1101010111 assuming the carrier frequency to be equal to the bit rate. Also derive the formula of BER in this case? 10
- b) What is noise? Write and explain the different types of noises in detail? Also comment on the Noise Bandwidth and Noise Figure? 10
9. a) Draw the block diagram of the satellite and explain its all blocks? 10
- b) What is link calculation. Why it is necessary for satellites? 10

OR

10. Write the short notes on the following :

- a) TDMA and FDMA 10
- b) Transponders 10

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