...on paper contains 2 printed pages.

Your Roll No. .....

F–7

...of Ques. Paper : 1337
...Paper Code : 2511503
...Paper : Communication Electronics
...of Course : B.Tech. (Electronics)
...ester : V
...ion : 3 hours
...um Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all. Question No. 1 is compulsory.
Use of scientific calculator is allowed.

1. (a) What is the frequency range of UHF band? Give its two uses.

(b) What are the advantages of using single sideband suppressed carrier modulation over an ordinary AM?

(c) Why is FM called a constant bandwidth modulation?

(d) Consider a voice message signal on a telephone line bandlimited to 3·4 KHz. Find the sampling frequency.

(e) Define information capacity. What is the difference between baud and bit rate? 5×3=15

2. (a) Discuss the types of noises which are present in a transistor? 7

(b) What is the difference between noise factor and noise figure? What is the ideal value of noise factor? 4

(c) The noise figure of the individual stages of a two stage amplifier is 2.03 dB and 1.54 dB respectively. The available power gain of the first stage is 62. Evaluate the overall noise figure. 4

3. (a) Explain using appropriate waveforms, how an amplitude modulated wave can be generated using a transistor collector modulator. 7

(b) Differentiate between average and envelope detectors used for AM detection. 4

(c) A 400 watt carrier is simultaneously modulated by two audio waves with modulation percentages of 50 and 60 respectively. What is the total side band power radiated? 4

4. (a) Derive a formula for instantaneous value of a frequency modulated wave. Also derive its frequency spectrum. 7

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(b)

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Differentiate between direct and indirect methods used for FM generation, giv appropriate block diagrams.

(c) A 107·6 MHz carrier is frequency modulated by a 7 KHz sine wave. The resultin FM signal has a frequency deviation of 50 KHz.

(i) Find the carrier swing of the FM signal.

(ii) Determine the highest and the lowest frequencies attained by the modulate signal.

(iii) What is the modulation index of the FM wave?

5. (a) State and prove the sampling theorem.

(b) Explain the working of any Pulse Width Modulator circuit.

(c) Discuss how we can demodulate a PPM signal.

6. (a) With the help of suitable block diagram, explain the PCM system.

(b) What is companding?

(c) 8 channels, each bandlimited to 5 KHz, are to be time division multiplexed. Eac sample is coded into a 6 bit word. Find the output rate in bits/second and th required bandwidth.

7. (a) Draw the block diagram of QPSK modulator and explain its working. What are i advantages over PSK?

(b) Determine the bandwidth and baud for an FSK signal with a mark frequenc KHz, a space frequency of 101 KHz and a bit rate of 10 kbps.

(c) Discuss the non-coherent detection of FSK.