WEST BENGAL STATE UNIVERSITY

B.Sc. Honours/Programme 3rd Semester Examination, 2021-22

ELSHGEC03T/ELSGCOR03T-ELECTRONICS (GE3/DSC3)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

GROUP-A

1. Answer any ***five*** questions from the following: 2×5 = 10

   (a) Define amplitude modulation. Draw its waveform.

   (b) What is the difference between PSK and FSK?

   (c) Draw a continuous-time and a discrete-time signal.

   (d) What is Carson's Rule for frequency Modulation?

   (e) What is meant by aliasing effect?

   (f) What is Nyquist rate?

   (g) What are the advantages of PCM?

   (h) Write the mathematical expression for Frequency Modulated Wave.

GROUP-B

Answer any *six* questions from the following 5×6 = 30

2. Show that an AM wave can be represented by a carrier and two side-frequency for each modulation frequency. 5

3. Define demodulation of A.M. Briefly describe on Envelope detector. 1+4

4. What are the difference between A.M and F.M? What do you mean by narrow band F.M? 4+1

5. State the sampling theorem for a bandlimited signal of finite energy. Derive the expression for power content in a single tone AM wave.

6. Compare FDM and TDM methods of multiplexing. What is side-tone? 4+1

7. Why are FSK and PSK signals preferred over ASK signals? Sketch the digitally modulated waveforms for binary data 1011001 using ASK and FSK. 3+2

8. How the message can be recovered from PAM? What is meant by quantization? 4+1

9. Determine the Nyquist rate for a continuous time signal: 5

$$x(t) = 6\cos 50\pi t + 20\sin 300\pi t - 10\cos 100\pi t$$

10. With neat sketch explain Global Positioning Satellite system. 5

11. Compare the uplink power requirements of FDMA and TDMA. 5

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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