



**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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