



ST. FRANCIS DE SALES COLLEGE

A FRANSALIAN INSTITUTE OF HIGHER EDUCATION **AUTONOMOUS**

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END SEMESTER EXAMINATION – APRIL/MAY 2026

ELECTRONICS – IV SEMESTER BSC

25BSC45A: ELECTRONIC COMMUNICATION

Time: 3 Hours.

Max. Marks: 80

Instruction: *Answer should be written completely in English.*

SECTION – A

Answer any **TEN** questions. Each question carries **TWO** marks.

(10X2=20)

1. Define PPM.
2. List the types of Sampling.
3. A signal bandwidth is 3 kHz. Find the minimum sampling frequency?
4. What is echo?
5. Define crosstalk.
6. Define information capacity of a channel.
7. What is Error Detection?
8. What is a transponder?
9. Define TDMA.
10. What is Antenna look angles?
11. Define Numerical Aperture.
12. Define LED.
13. What is PIN photodiode?

SECTION - B

Answer any **FIVE** questions. Each question carries **EIGHT** marks.

(5X8=40)

14. Explain analog modulation techniques AM, FM and PM with advantages and disadvantages.
15. Explain Adaptive Delta Modulation with block diagram, working principle, advantages and disadvantages.
16. Evaluate digital modulation techniques with waveforms.
17. Explain relationship between bandwidth requirements and data transmission speeds.
18. Explain satellite link model including uplink and downlink.
19. Discuss critical frequency, MUF, and skip distance with neat diagrams.
20. Explain Optical Fibre communication system with neat block diagram.
21. Derive Acceptance Angle and Numerical Aperture of an Optical Fibre Cable.



SECTION - C

Answer any **FOUR** questions. Each question carries **FIVE** marks.

(4X5=20)

22. A PCM system has 128 quantization level and sampling frequency of 12kHz. Calculate Number of bits per sample, Bit rate, Minimum Channel Bandwidth.
23. The FM voltage across a 10Ω load resistor is represented by the equation $V=10 \sin (6.28 \times 10^8 t + 4 \sin 5024 t)$. Find
 - a) Carrier frequency
 - b) Modulating frequency
 - c) Modulation index
 - d) Modulation deviation
24. Calculate the baud and Minimum Bandwidth needed to transmit a 5kbps Signal Using ASK.
25. Draw the PSK waveform for a binary sequence 1001111000.
26. The total power radiated by an isotropic radiator is 5kW. Calculate the power density at a distance of a) 100m b) 70 km from the source.
27. For a single mode optical fibre with a glass core of refractive index 1.5 and a fused quartz cladding of refractive index 1.46. Determine the critical angle, acceptance angle and Numerical Aperture source to fibre medium in air.
28. The cladding of a fibre is clad with a material of refractive index 1.52. The acceptance angle is found to be 20° . calculate the refractive index of core and Numerical Aperture of fibre, when launching takes place from air.

