

B.Sc. Sem.-6 Examination
309 - Electronics
(Electronics Communication)

Time : 2-30 Hours]

October-2025

[Max. Marks : 70

- Instructions :** (1) All question carry equal marks.
 (2) All questions are compulsory.

- 1 (a) What is an optical fiber ? Why are optical fibers preferred over copper wires? 7
 (b) Explain critical angle, total internal reflection and Fresnel reflection. 7
 OR
- 1 (a) Describe an experiment which was used to illustrate guided light. 7
 (b) Explain Snell's law. What is the critical angle for a ray passing from a medium with R.I.=1.5 to a medium with R.I.=1.46? Also draw the propagation of a light ray in a fibre. 7
- 2 (a) Draw the block diagram of a superheterodyne receiver and explain its working. 7
 (b) Explain sensitivity and selectivity of a radio receiver. 7
 OR
- 2 (a) Write a note on different mixers used in a radio receiver. 7
 (b) Explain the operation of a diode detector. 7
- 3 (a) Draw the block diagram of a basic monochrome television system and explain it in detail. 14
 OR
- 3 (a) Explain beam scanning. 7
 (b) Write a note on colour transmission and reception. 7
- 4 (a) Explain the fundamentals of digital communication. Also explain why data communications has become essential. 7
 (b) What is cross-talk? How can it be avoided? 7
 OR
- 4 (a) Write a note on parity-check codes. 7
 (b) Explain any one forward error-correcting code. 7
- 5 Answer any seven in short : 14
 (1) What is luminescence?
 (2) What is the optical frequency range?
 (3) What is scattering of light?
 (4) What is intermediate frequency?
 (5) Give any two advantages of using R.F. amplifier in a radio receiver
 (6) Write two disadvantages of tuned radio frequency receiver.
 (7) Define conversion transconductance.
 (8) What is the aspect ratio of a T.V.?
 (9) What is the interlace ratio in television systems?
 (10) What is the BCD code of 172?
 (11) Define transmission efficiency?
 (12) What is the unit of Signalling speed?