1. (a) Answer the following short questions in one or two sentences: (any four)
   (i) Describe wave refraction.
   (ii) Explain full duplex transmission mode in communication system.
   (iii) Explain wave symmetry.
   (iv) Define bandwidth of information.
   (v) Explain capture range of PLL.

1. (b) Answer the following questions in detail: (any two)  14
   (i) Write short note on uncorrelated noise.
   (ii) Write short note on indirect frequency synthesizer.
   (iii) Write short note on Redundancy checking error detection code.

2. (a) Answer the following questions: (any six)  6
   (i) Explain beam width parameter of wave radiation pattern.
   (ii) What are advantages of digital communication?
   (iii) List out optical fiber cable types and modes.
   (iv) Write definition about modulation.
(v) Write full form of “FDMA”.
(vi) List out different types of losses generated by optical fiber cable during optical wave communication.
(vii) Write full form of “ISDN”.

(b) Answer the following questions in detail: (any two)
(i) Write short note on Amplitude Shift Key (ASK).
(ii) Write short note on operator-Assisted Local Telephone Exchange.
(iii) Write short note on wave attenuation and absorption.

3 Answer the following questions in detail: (any three)
(i) Explain internal block diagram of FSK modem.
(ii) Write short note on Amplitude Modulation.
(iii) Write short note on Voltage controlled Oscillator (VCO).
(iv) Write short note on electromagnetic frequency spectrum.

4 (a) Find out true or false from given statements:
(i) RS232 use for serial interface communication.
(ii) An antenna is a metallic conductor system capable of radiating and capturing electromagnetic waves.
(iii) USRT full form is universal system of radio transmission.
(iv) PAM full form is Pulse Acquisition Mixer.

(b) Answer the following questions in detail: (any two)
(i) Explain PCM modulation technique in detail.
(ii) Write short note on TDMA.
(iii) Explain packet switching and circuit switching using appropriate example.