

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the types of services, requirements, spectrum limitations and noise considerations of wireless communications. (16)

Or

- (b) Explain the principle of Cellular Networks and various types of Handoff techniques. (16)

12. (a) (i) Briefly explain the factors that influence small-scale fading. (8)
(ii) If a transmitter produces 50 W of power, express the transmit power in units of dBm and dBW. If 50 W is applied to a unity gain antenna with a 900 MHz carrier frequency, find the received power in dBm at a free space distance of 100 m from the antenna. What is P_r (10 km)? Assume unity gain for the receiver antenna. (8)

Or

- (b) (i) Briefly explain the three basic propagation mechanisms which impact propagation in a mobile communication system. (8)
(ii) What is Brewster angle? Calculate the Brewster angle for a wave impinging on ground having a permittivity of $\epsilon_r = 4$. (8)

13. (a) (i) Explain the Nyquist criterion for ISI cancellation. (8)
(ii) With transfer function, explain the raised cosine roll off filter. (8)

Or

- (b) (i) Explain the QPSK transmission and detection techniques. (8)
(ii) Explain the performance of Digital modulation in slow flat-fading channels. (8)

14. (a) Explain in detail about :
(i) Linear Equalizers. (8)
(ii) Non Linear Equalizers. (8)

Or

- (b) (i) With block diagram, explain the operation of a RAKE receiver. (8)
(ii) Briefly explain the frequency domain coding of speech signals. (8)

15. (a) Explain in detail about :
- (i) Direct sequence spread spectrum technique.
 - (ii) Frequency hopped spread spectrum technique.

Or

- (b) Discuss in detail about second generation (2G) and third generation (3G) wireless networks and standards. (16)

