

(3 Hours)

[Total Marks : 100

- N.B.** (1) Attempt any **five** questions.
 (2) **Marks to the right** indicate **full** marks.
 (3) Make **suitable** assumptions wherever **necessary** and **clearly justify** them.

1. Differentiate between the following : (At least **four points**) (any **five**) :—
 - (a) Infrastructure and Adhoc networks 4
 - (b) IPv4. and IPv6 4
 - (c) FHSS and DSSS 4
 - (d) IEEE 802.11 a and IEEE 802.11 b 4
 - (e) Infra red & radio transmission 4
 - (f) FDMA and TDMA 4
 - (g) Indirect TCP and Snooping TCP 4
 - (h) CDMA and GSM. 4

2. (a) Discuss about components and interface of WAP 1.x architecture. 6
 (b) Draw the block diagram of FHSS transmitter and receiver. 10
 Differentiate between slow frequency hopping and fast frequency hopping.
 (c) Explain the entities in brief : 4
 - (i) Home agent (iii) Foreign agent
 - (ii) Mobile node (iv) Care-of address.

3. (a) What are the functions of authentication and encryption in GSM ? 10
 How is system security maintained ?
 (b) Explain 'Bluetooth protocol stack' with neat diagram. 10

4. (a) What characteristics do the different orbits have ? 8
 What are their pros and cons ?
 (b) Explain how tunneling works for mobile IP using IP-in-IP, Minimal, and generic routing encapsulation, respectively. Discuss advantages and disadvantages of these three methods. 12

5. (a) How can DHCP be used for mobility and support of mobile IP ? 5
 (b) Explain cellular system in detail with various handover mechanisms. 10
 (c) Explain hidden and exposed terminals problem. How MACA avoids these problems ? 5

6. Write a short notes on : (any **two**)
 - (a) GSM architecture 10
 - (b) Routing protocols in Ad-hoc networks. 10
 - (c) Mobile and wireless devices. 10
 - (d) Power management in IEEE 802.11 infrastructure networks. 10

7. (a) What are the benefits of reservation scheme ? How collisions are avoided during data transmission ? Explain DAMA scheme. 8
 (b) Two senders, A and B, want to send data. CDMA assigns the following unique and orthogonal key sequences : key $A_k = 010011$ for sender A, key $B_k = 110101$ for sender B. Sender A wants to send the bit $A_d = 1$, sender B sends $B_d = 0$.
 Let us assume that we code a binary 0 as -1 , a binary 1 as $+1$, Show calculations, how spreading be achieved ? What can the receiver detect for sender A and B respectively ? 12