(3 Hours) [Total Marks : 100

Note :
(1) Q1 is compulsory and attempt any 4 from remaining questions.
(2) Answer to the point.
(3) Assumptions should be highlighted and justified.
(4) Draw diagram to explain the theory wherever necessary.
(5) Start major question on new page and maintain the order of questions.
(6) For every question and its answer, title it with details e.g. Q3/a/2/i if there are subsections.
(7) While stapling the supplements, take care that questions numbers and answers are not obscured.

1. (a) i) State the use of timers in physical , Data link ,Network & Transport Layers 10

ii) List the special IP addresses (not class A,B ..)

(b) i) Explain the working of internetworking in terms of IP and MAC addresses 10

ii) Suppose *Bobby* has got message M, private key sk1, and public key pk1 and *Bob* has got private key sk2 and public key pk2. *Bobby* computes $x = E_{sk1}(M)$, $y = E_{pk2}(H(M))$ where E is encryption and H is hash. Now she sends this x,y to *Bob*. State the security goals achieved and not achieved.

2. (a) List at list 10 commands in LINUX or Windows platforms used for networking. 10

(b) List Blue tooth features and Explain Network Formation process. 10

3. (a) You are surfing the net from your terminal. Identify software and hardware components and relate them with ISO- OSI layered model. 10

(b) State different Physical Media properties. Also write about Twisted Pair Cables. 10

4. (a) List the 10 important features of IPV6 Protocol considering addressing, flow control, error control, Security, mobility, Quality of service. 10

(b) How to achieve authentication with secret key. Justify it. Also describe authentication with KDC mechanism. 10

5. (a) Explain the significant role of propagation delay in Ethernet segment. 10

(b) i) State different TCP flags. 10

ii) Why does UDP exists ? Would it not have been enough to just let user processes send Raw IP packets?

6. (a) Describe Hidden Station and Exposed station problem in Wireless LAN. 10

(b) How TCP controls congestion? 10

7. (a) Explain ATM adaption Layer. Also Describe VPI and VCI concept. 10

(b) How mails are sent and received. Show with diagrams. Also draw mail headers. 10