Instructions: (1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

1. Attempt any FIVE of the following: [10]
   (a) Compare IPv4 & IPv6.
   (b) State the importance of IPv6 over IPv4.
   (c) Distinguish between SMTP and POP3 protocols.
   (d) State the use of six flags in TCP header.
   (e) Explain the concept of connection oriented service.
   (f) State the use of SSH.
   (g) State the concept of fragmentation in IPv4.

2. Attempt any THREE of the following: [12]
   (a) Explain control chunk of SCTP.
   (b) Explain ICMP protocol? Describe the header format of ICMP.
   (c) Describe SMTP with suitable diagram.
   (d) For the block of IPv4 addresses given below build Subnet Mask, Broadcast Address and Number of Hosts possible.
      (i) 10.0.199.237/22  (ii) 192.168.14.87/26

3. Attempt any THREE of the following: [12]
   (a) Describe distance vector routing algorithm.
   (b) Explain timers in RIP.
   (c) Describe the Architecture of E-mail system using four scenario.
   (d) Explain TCP timers.

4. Attempt any THREE of the following: [12]
   (a) Construct a diagram to show the application of cookies in a scenario in which the server uses cookies for advertisement.
   (b) List Intra domain multicast protocols? Explain any one in detail.
   (c) Describe the HTTP Response Message format.
   (d) Compare TCP and UDP with any four points.
   (e) Explain the working of TELNET.
5. Attempt any TWO of the following:  
(a) Explain association establishment process in SCTP.  
(b) State the need for:  
   (i) sequence control  
   (ii) error control  
   (iii) flow control.  
Under Transport Layer  
(c) Explain IPV4 datagram format.

6. Attempt any TWO of the following:  
(a) Explain FTP & TFTP protocol.  
(b) For the IP Addresses given below:  
   (i) Identify the classes to which the following IP numbers belong to  
   (ii) Identify network Address section  
   (iii) Identify Host Address section  
   (iv) Calculate number of hosts that can be assigned with each network  
   1. 122.34.45.133       2. 12.12.12.12  
   3. 192.0.233.26       4. 126.123.16.87  
(c) Describe Email Security over non- secure channel.

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