

Q.P. Code : 19488

(3 Hours)

[ Total Marks : 80

- N.B:
- (1) Q.1 is compulsory.
  - (2) Solve any **four** questions from remaining six questions.
  - (3) Each question carries **equal** marks
  - (4) Figures to right indicate marks.
  - (5) Use of calculator is allowed.

- 1 (a) Explain the IEEE 802.11 Protocol Architecture and its Services. 10  
(b) An organization is granted a block of address starting with 143.87.49.53/18 Find the following 10
- (i) Subnet mask in dotted decimal:
  - (ii) Number of networks & Number of hosts
  - (iii) Subnet address
  - (iv) First usable host & Last usable host
  - (v) Broadcast address
- 2 (a) Explain the Domain Naming System. Explain its all rule and components. 8  
(b) Explain the ISO-OSI Reference Model in details. 7
- 3 (a) Explain the Unicast Routing Protocol and Explain OSPF and RIP 8  
(b) What is the difference between distance vector and link state routing protocol. Explain any link state routing algorithm. 7
- 4 (a) Explain 2-layer, 3-layer Switch and Bridge, Gateway. 8  
(b) Explain the concept of Redundancy used by Data Link Layer for Error Detection? Calculate the VRC for 111010,11011001,110101,0111010 7
- 5 (a) What do you mean by ARP and PPP over the Internet Standard? Explain its features in details. 8  
(b) Explain the IP Addressing System along its classes. What do you mean by Subnet Masking? 7
- 6 (a) Explain the CRC and Checksum Error detecting algorithm with some example. 8  
(b) Write short note following (any two) 7
- (i) SMTP
  - (ii) MPLS
  - (iii) IP over ATM
7. (a) What is Quality of Service? What are the methods used to provide QoS? 8  
(b) Explain the concept of Network Address Translation? 7



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QP Code : GJ-10280

( 3 Hours )

[ Total Marks : 80

- .B. : (1) Question No. 1 is compulsory.  
(2) Attempt any four questions from the remaining questions.  
(3) Figures to the right indicate full marks.

Answer any four from the following :-

- (a) Discuss the different types of topology with its advantages and disadvantages. 20
- (b) Explain the terms : Intranet, Internet, Extranet.
- (c) Write short notes on special addresses with example.
- (d) Write short notes on ARP.
- (e) Explain the concept of tunneling in internetworking.
- (f) Compare between link state and distance vector protocols.
- (a) An organization is granted a block of addresses with the beginning address 10.14.24.71.0/24. The organization needs to have 3 sub blocks to use in its 3 subnets as shown below :-
- (i) One subblock of 120 addresses
  - (ii) One subblock of 60 addresses
  - (iii) One subblock of 10 addresses.
- Design the subblocks and give the slash notation for each subblock. Find how many addresses are still available after these allocations.
- (b) What is the theoretical capacity of a channel if the bandwidth of the channel is 200 KHz and  $SNR_{dB} = 6$ . 5
- (a) What is congestion ? Explain the congestion control in TCP. 8
- (b) Calculate the CRC for the following bitstream 11101011011 using the divisor 1011. 7
- (a) Explain the spanning tree creation in broadcast routing. Also explain how the redundant packets are not received by the nodes. 8
- (b) What is intra-domain routing ? Explain the intra-domain routing protocols in detail. 7
- (a) In which layer PPP works ? Explain PPP in detail. 8
- (b) Explain how the reliable data transfer is achieved using selective repeat protocol. 7
- (a) Explain the different queue management algorithms used in routers. 8
- (b) Explain the persistent and non-persistent connections of HTTP. What is the difference between persistence HTTP with pipelining and without pipelining ? Which of the two is used by HTTP/1.1 ? 7
- (a) Write short notes on :-
- (i) CSMA and CSMA/CD
  - (ii) SMTP. 8
- (b) Explain the 4-way termination process of TCP connection termination. 7

- N.B. : (1) Question no. one is compulsory.  
 (2) Attempt any four from the remaining six questions.  
 (3) Assumptions should be made whenever required and should be clearly stated.  
 (4) Answers to sub questions should be answered together.  
 (5) Illustrate answers with diagrams wherever necessary.

1. (a) Differentiate between the following (Any four) 10  
 (i) 2 layer switches and 3 layer switches  
 (ii) TCP and UDP  
 (iii) Circuit switching and packet switching  
 (iv) Go back n and select repeat ARQ  
 (v) FDMA and TDMA  
 (b) Explain various error detection codes with examples. Calculate the CRC 10  
 for 1101010011 using the generator polynomial  $X^2+1$ .
2. (a) Describe ALOHA multiple access techniques and its different forms with 8  
 performance.  
 (b) Explain the principles of reliable data transfer in detail. 7
3. (a) Compare distance vector routing and link state routing with the help of 8  
 examples of each.  
 (b) Discuss different types of impairments that can affect the wired transmission. 7
4. (a) Explain IEEE 802.5 with frame format and specifications. 8  
 (b) For the following IP address 177.56.45.13/23. Give subnet address, default 7  
 subnet mask, broadcast address and host address range.
5. (a) Discuss the use of hub, bridges, switch, router and gateway in networking. 8  
 Also specify the layers in which they are used.  
 (b) What is Congestion control? How it is different from flow control mechanism. 7  
 Explain leaky bucket algorithm to deal with congestion.
6. (a) Explain unicast and multicast routing protocols with its different types. 8  
 (b) Discuss various collision free protocols. 7
7. (a) Write short notes on: (Any three) :— 15  
 (a) IP over ATM  
 (b) DHCP  
 (c) M/M/1 model  
 (d) Fiber optic cable.

Con. 3005-13.

CE-8121

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- N.B. : (1) Question No. **one** is compulsory.  
 (2) Attempt any **four** questions from **six** questions.

1. (a) Describe the steps involved in communication between web and HTTP. 10  
 (b) Explain unicast routing protocols. Describe any two in detail. 10
2. (a) How many types of different devices are required to interconnect the networks? 8  
 (b) Describe various queue management algorithms used by TCP. 7
3. (a) What is multiple access? Explain different multiple access protocols. 8  
 (b) Explain difference between distance vector and link state routing protocol. 7  
 Explain any one link state routing algorithm in detail.
4. (a) Why do routers need queuing algorithms? Explain M/M/1 model. 8  
 (b) Why OSI model was created? Explain OSI model and difference between OSI and TCP/IP model. 7
5. (a) What is spanning tree? Describe the steps of creating a spanning tree. 8  
 (b) What is the requirement of MPLS? Describe features of MPLS. 7
6. (a) What are the characteristics of different guided media used in the networks? 8  
 (b) PPP protocol works at which layer of OSI model? Explain PPP protocol in detail. 7
7. Write short note on following (any three):- 15
  - (a) NAT
  - (b) FTP
  - (c) IP over ATM
  - (d) SMTP
  - (e) DNS.

