**DEPARTMENT OF INFORMATION TECHNOLOGY**

**QUESTION BANK**

**SUBJECT** **: TCP/IP DESIGN AND IMPLEMENTATION**

**SEM / YEAR: VIII Sem/IV Year**

**UNIT I - INTRODUCTION**

Internetworking concepts and architecture model – classful Internet address – CIDR – Subnetting and Supernetting – AARP – RARP- IP- IP Routing – ICMP – IPV6

**PART - A**

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| **Q.No** | **Questions** |  | **BT Level** | **Competence** |  |
| 1. | Distinguish between Direct and Indirect delivery system. |  | BTL-1 | Remembering |  |
| 2. | What is TCP / IP. |  | BTL-1 | Remembering |  |
| 3. | Define classful and classless addressing. |  | BTL-1 | Remembering |  |
| 4. | Define Address Resolution Protocol. |  | BTL-1 | Remembering |  |
| 5. | Compare Error Reporting and Error Correcting. |  | BTL-4 | Analyzing |  |
| 6. | Which ICMP message are used in PING Command. |  | BTL-4 | Analyzing |  |
| 7. | When is ICMP redirect message used? |  | BTL-4 | Analyzing |  |
| 8. | What does 10.10.0.0/16 mean? |  | BTL-3 | Applying |  |
| 9. | What is the use of RARP. |  | BTL-1 | Remembering |  |
| 10. | Why is IPV4 to IPV6 transition required? |  | BTL-2 | Understanding |  |
| 11. | Define Subnet masking |  | BTL-1 | Remembering |  |
| 12. | Purpose of ICMP Protocol |  | BTL-5 | Evaluating |  |
| 13. | Compare classful and classless addressing |  | BTL-2 | Understanding |  |
| 14. | How to find the physical address in drive less systems? |  | BTL-3 | Applying |  |
| 15. | What is Subneting with examples. |  | BTL-2 | Understanding |  |
| 16. | How the errors are detected in IP? |  | BTL-6 | Creating |  |
| 17. | Describe the difference between static and dynamic Routing. |  | BTL-3 | Applying |  |
| 18. | Define Super netting with examples. |  | BTL-2 | Understanding |  |
| 19. | Evaluate the main reason for IPV6 being developed. |  | BTL-5 | Evaluating |  |
| 20. | How subnet masks are used to determine the Network Number. |  | BTL-6 | Creating |  |
|  | **PART – B** |  |  |  |  |
|  | |  |  |  |  |
| 1. | (i).Explain about Internet Control Message Protocol. | (9) | BTL-2 | Understanding |  |
|  | (ii).Give the advantages of CIDR | (4) |  |
|  |  |  |  |
| 2. | (i)Explain the message format of RARP and give its drawbacks. | (7) | BTL-1 | Remembering |  |
|  |  |
|  | (ii)Highlight the features of IPV6. | (6) |  |
|  |  |  |  |
| 3. | Explain in detail about classful and classless addressing techniques. (13) | | BTL-1 | Remembering |  |
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|  | 4. | Consider a corporate network with IP address 172.42.00. Create | | | | | | | 10 |  |  |  |  |  |
|  |  | subnetworks and connect 10 systems to each subnetwork | | | | | .Assign | | IP | | BTL-5 | | Evaluating |  |
|  |  | address for all the subnetworks and systems using subnet concept | | | | | | | | |  |
|  |  |  |  |  |  |
|  |  | (13) |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 5. | What is the purpose of subnetting? Explain the various subnet mask. | | | | | | |  |  | BTL-1 | | Remembering |  |
|  |  |  |  |  |
|  |  | (13) |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 6. | Briefly explain the various routing techniques in detail. | | | | |  | (13) | |  | BTL-2 | | Understanding |  |
|  | 7. | Compare the distance vector and link state routing protocol with | | | | | | |  |  | BTL-4 | | Analyzing |  |
|  |  |  |  |  |
|  |  | example |  |  |  |  |  | (13) | |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | 8. | Routing Information Protocol (RIP) implements distance vector routing. | | | | | | | | |  |  |  |  |
|  |  | BTL-3 | | Applying |  |
|  |  | Describe | how | routing | tables are build | and updated | | with | it. | |  |
|  |  |  |  |  |  |
|  |  | (13) |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 9. | (i)Describe | | about | Border | Gateway |  | Protocol. | | |  |  |  |  |
|  |  | (7) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | (ii)Discuss | the | types | of error reporting messages | | in | ICMP. | | | BTL-4 | | Analyzing |  |
|  |  | (6) |  |  |  |  |  |  |  |  |  |
|  | 10. | Explain in detail about the ARP and RARP with neat sketch. | | | | |  | (13) | |  | BTL-1 | | Remembering |  |
|  |  |  |  |  |  |  |  |
|  | 11. | (i)Following IP addresses have special meaning. Explain them. | | | | | |  |  |  |  |  |  |  |
|  |  |  |  | 1) 0.0.0.0 and 2)127.0.0.1 | |  |  | (4) | |  |  |  |  |  |
|  |  | (ii) An organization is granted the block 211.17.180.0. The administrator | | | | | | | | | BTL-6 | | Creating |  |
|  |  | wants to create 5 subnets. Determine the valid range of IP addresses for | | | | | | | | |  |  |  |  |
|  |  | each subnet. | |  |  |  |  | (9) | |  |  |  |  |  |
|  | 12. | Explain about subnetting and supernetting in detail with example. | | | | | | |  |  | BTL-2 | | Understanding |  |
|  |  |  |  |  |  |  |  | (13) | |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | | | | |  |  |  |  |  |  |  |  |
|  | 13. | (i)Find the class and CIDR notation of each address | | | | |  |  |  |  |  |  |  |  |
|  |  | (1) 11000001 10000011 00011011 1111 1111 | | | |  |  |  |  |  | BTL-3 | | Applying |  |
|  |  | (2) 128.211.168.0 | | |  |  |  | (7) | |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  | (ii)Compare Address Resolution Protocol and RARP | | | | |  | (6) | |  |  |  |  |  |
|  | 14. | Discuss in detail about IP Routing. | | | |  |  | (13) | |  | BTL-4 | | Analyzing |  |
|  |  |  |  |  |  |
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|  |  |  |  |  | **Part-C** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Q.No** |  |  |  | **Questions** |  |  |  |  |  | **Level** |  | **Competence** |  |
|  |  |  | | | | | | |  |  |  |  |  |  |
|  | 1 | Find the class of each IP address. Give suitable explanation. | | | | | | |  |  |  |  |  |  |
|  |  | i) 217.12.14.87 | |  |  |  |  | (3) |  |  |  |  |  |  |
|  |  | ii) 198.14.56.22 | | |  |  |  | (3) |  |  | BTL-6 |  | Creating |  |
|  |  | iii) 12.23.120.8 | |  |  |  |  | (3) | |  |  |  |  |  |
|  |  | iv) 2562.5.15.111 | | |  |  |  | (3) |  |  |  |  |  |  |
|  |  | v)1344.11.78.56 | | |  |  |  | (3) |  |  |  |  |  |  |
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| 2. | (i) Consider sending a 3500-byte datagram that has arrived at a | |  |  |  |
|  | router R1 that needs to be sent over a link that has an MTU size | |  |  |  |
|  | of 1000 bytes to R2. Then it has to traverse a link with an MTU | |  |  |  |
|  | of 600 bytes. Let the identification number of the | original | BTL-5 | Evaluating |  |
|  | datagram be 465. How many fragments are delivered at the | |  |
|  |  |  |  |
|  | destination? Show the parameters associated with each of these | |  |  |  |
|  | fragments. | (8) |  |  |  |
|  | (ii) Explain the working of DHCP protocol with its header |  |  |  |  |
|  | format. | (7) |  |  |  |
|  |  | |  |  |  |
| 3 | How IP address space divided into different is classful addressed? | | BTL-4 | Analyzing |  |
|  | Explain. | (15) |  |
|  |  |  |  |
| 4 | (i)Discuss the types of error reporting messages in ICMP. | (10) | BTL-4 | Analyzing |  |
|  | (ii)Compare IPv4 and IPv6. | (5) |  |
|  |  |  |  |

**UNIT II - TCP**

Services – header – connection establishment and termination – interactive data flow – bulk data flow – timeout and retransmission – persist timer – keep alive timer – futures and performance.

**PART - A**

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| **Q.No** | **Questions** | **BT Level** | **Competence** |  |
|  |  |  |  |  |
| 1. | Infer TCP connection Termination Process. | BTL-3 | Applying |  |
| 2. | How TCP initiates retransmission of data? | BTL-3 | Applying |  |
| 3. | Creates the connection between source and destination. What are the | BTL-6 | Creating |  |
|  | three events involved in the connection? |  |
|  |  |  |  |
| 4. | List the flag used in TCP header? | BTL-2 | Understanding |  |
| 5. | Explain the purpose of urgent pointer in the TCP header? | BTL-4 | Analyzing |  |
|  |  |
| 6. | Describe the protocol used for connection establishment. | BTL-1 | Remembering |  |
| 7. | What is Keep Alive Timer | BTL-1 | Remembering |  |
| 8. | Give the neat sketch for 3-way handshake protocol. | BTL-1 | Remembering |  |
| 9. | Create a flow diagram of TCP connection establishment | BTL-6 | Creating |  |
| 10. | List down TCP services? | BTL-1 | Remembering |  |
| 11. | What is the format of UDP packet? Explain. | BTL-5 | Evaluating |  |
| 12. | What is DHCP? | BTL-1 | Remembering |  |
| 13. | Explain interactive data flow and bulk data flow. | BTL-5 | Evaluating |  |
| 14. | List advantages of keep alive feature. | BTL-1 | Remembering |  |
|  |  |  |  |
| 15. | What is RTT? | BTL-2 | Understanding |  |
| 16. | What value should TCP use for a retransmission timer? | BTL-3 | Applying |  |
| 17. | How does TCP achieve reliability in data transmission? | BTL-2 | Understanding |  |
| 18. | Point out the various timers used in TCP. | BTL-4 | Analyzing |  |
|  |  |
| 19. | Describe the various fields in IP Header format | BTL-4 | Analyzing |  |
|  |  |
| 20. | What is meant by segmentation? | BTL-2 | Understanding |  |

**PART - B**

|  |  |  |  |  |  |  |  |  |  |  |
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| 1. | | (i)Describe how to establish and terminate in TCP | |  |  |  |  |  |  |  |
|  |  | Connection. | | (7) |  |  |  |  |  |  |
|  |  | (ii)Compare Interactive data and bulk data transfer in TCP. | | (6) |  | BTL-4 |  | Analyzing |  |  |
| 2. | | Explain How is flow control done in TCP? | | (13) |  | BTL-4 |  | Analyzing |  |  |
|  |  |  |  |  |  |  |  |  |
| 3. | | Draw the sketch of TCP header and explain the various fields in- | | |  | BTL-1 |  | Remembering |  |  |
|  |  | detail. | | (13) |  |  |  |  |
|  |  |  |  |  |  |  |  |
| 4. | |  | Write notes on TCP Timer management in detail. | (13) |  | BTL-1 |  | Remembering |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
| 5. | | Illustrate in detail with examples, how 4 different ICMP request/reply | | |  | BTL-3 |  | Applying |  |  |
|  |  | messages and 4 different error messages are handled. | | (13) |  |  |  |  |
|  |  |  |  |  |  |  |  |
| 6. | | Create a file of size 0.5MB needs to be transmitted from A to B with | | |  |  |  |  |  |  |
|  |  | an MSS of 512 bytes. Show the transmissions starting from connection | | |  |  |  |  |  |  |
|  |  | establishment to closing of the connection. Each stage, show the | | |  | BTL-6 |  | Creating |  |  |
|  |  | Window size, Window advertisement, Sequence number and ACK | | |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | number. Sender Window size = Receiver Window size = 2KB. | | |  |  |  |  |  |  |
|  |  | (13) | |  |  |  |  |  |  |  |
| 7. | | (i)What do you understand by three way handshake in TCP? Explain | | |  |  |  |  |  |  |
|  |  | (7) | |  |  | BTL-1 |  | Remembering |  |  |
|  |  | (ii)Explain how the TCP provides the reliability? | | (6) |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
| 8. | | Explain the various states involved in TCP connection termination | | |  | BTL-3 |  | Applying |  |  |
|  |  | (13) | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
| 9. | | With the aid of time sequence diagrams showing typical user service | | |  |  |  |  |  |  |
|  |  | primitive exchanges ,explain how two transport users perform | | |  | BTL-4 |  | Analyzing |  |  |
|  |  | (i)TCP graceful connection termination | | (7) |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  | (ii)TCP abort | (6) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| 10. | | Sketch out the TCP State Machine in Detail | | (13) |  | BTL-1 |  | Remembering |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| 11. | | (i)Explain about Keepalive timer and its importance. | | (6) |  |  |  |  |  |  |
|  |  | (ii)List the major features of the service provided by TCP,Briefly | | |  | BTL-5 |  | Evaluating |  |  |
|  |  | explain how congestion control is done in TCP. | | (7) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| 12. | | (i)Sketch out the necessities of persist timer in detail. | | (6) |  | BTL-2 |  | Understanding |  |  |
|  |  | (ii)Compare TCP and UDP protocals | | (7) |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
| 13. | | (i)Write in detail about timeout and retransmission of data packets.(7) | | |  |  |  |  |  |  |
|  |  | (ii)With the help of time sequence diagram explain TCP connection | | |  | BTL-2 |  | Understanding |  |  |
|  |  | establishment and TCP connection abort | | (6) |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
| 14. | | Discuss the various timers used in TCP connection establishment. (13) | | |  | BTL-2 |  | Understanding |  |  |
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|  |  |  | **Part-C** |  |  |  |  |  |  |  |
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|  | **Q.No** |  | **Questions** |  |  | **Level** |  | **Competence** |  |  |
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|  | 1 |  | Explain the adaptive retransmission policy used in TCP. | (15) |  | BTL-6 |  | Creating |  |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 2. |  | (i)What are the 3 phases a connection oriented transport service goes | |  | BTL-5 |  | Evaluating |  |  |
|  |  |  | through? Explain in detail. | (8) |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  | (ii)Explain the factors determine the reliability of a delivery | (7) |  |  |  |  |  |  |
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| 3 | Explain in detail about silly window syndrome? Explain flow control | | BTL-4 | Analyzing |  |
|  | for TCP. | (15) |  |
|  |  |  |  |
| 4 | (i)With neat architecture explain TCP in detail . | (8) |  |  |  |
|  | (ii)Specify the justification for having variable field lengths for the | | BTL-4 | Analyzing |  |
|  | fields in the TCP header. | (7) |  |  |  |

**UNIT III - IP IMPLEMENTATION**

IP global software organization –routing table–routing algorithms – fragmentation and reassembly –error processing (ICMP) – Multicast Processing (IGMP).

**PART - A**

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| **Q.No** | **Questions** | **BT Level** | **Competence** |  |
| 1. | Point out the fields available in routing table. | BTL-2 | Understanding |  |
|  |  |  |  |  |
| 2. | What is the need of fragmentation? | BTL-2 | Understanding |  |
|  |  |  |  |  |
| 3. | What is the role of ICMP. | BTL-1 | Remembering |  |
|  |  |  |  |  |
| 4. | How the IP software is designed | BTL-5 | Evaluating |  |
|  |  |  |  |  |
| 5. | Define the term “directed broadcast” | BTL-1 | Remembering |  |
|  |  |  |  |  |
| 6. | Can you relate the two different classes of routing protocol? | BTL-4 | Analyzing |  |
|  |  |  |
| 7. | Discover purpose the ‘don’t fragment’ and ‘most fragment’ bit? |  |  |  |
|  | BTL-4 | Analyzing |  |
|  |  |  |
| 8. | Define the term “fragment fragmentation” | BTL-1 | Remembering |  |
|  |  |  |
|  |  |  |  |  |
| 9. | Differentiate between ‘datagram fragmentation’ and ‘fragment | BTL-3 | Applying |  |
|  | fragmentation’ |  |
|  |  |  |  |
| 10. | How the ‘fragment offset’ field will help | BTL-6 | Creating |  |
| 11. | When an ICMP error can be generated? | BTL-3 | Applying |  |
|  |  |  |  |  |
| 12. | Explain the calculation of Round Trip Time | BTL-4 | Analyzing |  |
|  |  |
| 13. | List of the types of packets used in BGP. | BTL-1 | Remembering |  |
| 14. | What are types of IGMP message? | BTL-3 | Applying |  |
|  |  |  |  |  |
| 15. | Mention any four applications of multicasting? | BTL-1 | Remembering |  |
|  |  |
|  |  |  |  |
| 16. | What is meant by ICMP errors? | BTL-1 | Remembering |  |
| 17. | How is fragmentation and reassembly of datagrams implemented? | BTL-5 | Evaluating |  |
|  |  |
|  |  |  |  |
| 18. | Write notes on data portion of an ICMP message | BTL-2 | Understanding |  |
| 19. | Fragmentation of fragmented packet is possible-Justify | BTL-6 | Creating |  |
| 20. | Explain any one routing algorithm used in Internet | BTL-2 | Understanding |  |

**PART - B**

1. (i)Write a routine for fragmentation and reassembly that is carried out

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| in networks during data transmission. | (7) |  |  |
| (ii)Compare static and dynamic routing | (6) | BTL-4 | Analyzing |

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| 2. | Explain in detail -about any two routing algorithms in -networks. |  |  |  |
|  | BTL-1 | Remembering |  |
|  | With suitable example show the behavior of your chosen algorithm |  |
|  |  |  |  |
|  | (13) |  |  |  |

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|  | 3. |  | (i) Give the structure of the IP routing table. | | (7) |  |  |  |  |  |
|  |  |  | (ii)How is multicasting implemented in internet? | | (6) |  | BTL-4 |  | Analyzing |  |
|  |  |  |  |  |  |  |  |  |
|  | 4. |  | i)How is fragmentation and reassembly of datagrams implemented? | | |  |  |  |  |  |
|  |  |  | (7) |  |  |  | BTL-5 |  | Evaluating |  |
|  |  |  | (ii)Explain any one routing algorithm used in Internet. | | (6) |  |  |  |  |  |
|  |  |  |  | | |  |  |  |  |  |
|  | 5. |  | (i)With an example, explain the distance vector routing algorithm | | |  |  |  |  |  |
|  |  |  | (7) |  |  |  |  |  |  |  |
|  |  |  | (ii)Highlight the importance of ICMP in IP implementation. | |  |  |  |  |  |  |
|  |  |  | (6) |  |  |  | BTL-4 |  | Analyzing |  |
|  | 6. |  | (i)Explain the procedures for handling incoming and outgoing | |  |  |  |  |  |  |
|  |  |  | datagrams by IP process. | | (7) |  | BTL-2 |  | Understanding |  |
|  |  |  | (ii)Compare Link state routing and Distance vector routing | |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  | (6) |  |  |  |  |  |  |  |
|  | 7. |  | How is the Routing Table maintained? Explain the procedures | |  |  |  |  |  |  |
|  |  |  | involved in maintaining and obtaining a route from Routing Table. | | |  | BTL-6 |  | Creating |  |
|  |  |  | (13) |  |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 8. |  | (i) Explain IGMP operation and its message format. | | (7) |  |  |  |  |  |
|  |  |  | (ii)Describe the routing principles in IP routing. | | (6) |  | BTL-2 |  | Understanding |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  | | |  |  |  |  |  |
|  | 9. |  | What are the components used in the ICMP package and explain it | | |  | BTL-1 |  | Remembering |  |
|  |  |  | with neat diagram | | (13) |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 10. |  | (i)Describe about IP global software in detail. | | (6) |  | BTL-3 |  | Applying |  |
|  |  |  | (ii)Explain the features of RIP | | (7) |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 11. |  | Explain about IP Routing in detail. | | (13) |  | BTL-1 |  | Remembering |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 12. |  | Explain about fragmentation and reassembly in detail. | | (13) |  | BTL-3 |  | Applying |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  | 13. |  | (i)What are the components used in the IGMP package and explain it? | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  | (7) |  |  |  | BTL-1 |  | Remembering |  |
|  |  |  | (ii)What are the problems associated with fragmenting | | (6) |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 14. |  | Describe about ICMP error processing. | | (13) |  | BTL-2 |  | Understanding |  |
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|  |  |  |  | **Part-C** |  |  |  |  |  |  |
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|  | **Q.No** |  |  | **Questions** |  |  | **Level** |  | **Competence** |  |
|  |  |  |  | | |  |  |  |  |  |
|  | 1 |  | i)Examine the elements used in defining the Multicast . Explain in | | |  |  |  |  |  |
|  |  |  | detail. |  | (8) |  | BTL-5 |  | Evaluating |  |
|  |  |  | ii)What | is internet multicasting? Explain in | detail. |  |  |  |  |  |
|  |  |  | (7) |  |  |  |  |  |  |  |
|  |  |  |  | | |  |  |  |  |  |
|  | 2 |  | Explain the shortest path path routing algorithm with an example. (15) | | |  | BTL-5 |  | Evaluating |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 3 |  | Explain the different types of multicast routing protocols | | (15) |  | BTL-6 |  | Creating |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 4 |  | (i)How does one know where a fragment fits with in the original | |  |  |  |  |  |  |
|  |  |  | datagram |  | (8) |  | BTL-4 |  | Analyzing |  |
|  |  |  | (ii)Compare adaptive and Non-adaptive routing algorithms | | (7) |  |  |  |
|  |  |  |  |  |  |  |  |
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**UNIT IV - TCP IMPLEMENTATION I**

Data structure and input processing – transmission control blocks – segment format – comparisons–finite state machine implementation – Output processing – mutual exclusion –computing the computing the TCP Data length.

**PART - A**

|  |  |  |  |  |  |  |  |
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| **Q.N** |  | **Questions** | |  | **BT** | **Competence** |  |
| 1. |  | Specify the contents of a TCB. | |  | BTL-1 | Remembering |  |
|  |  |  |  |  |  |  |  |
| 2. |  | Point out the various states of TCP FSM. | |  | BTL-4 | Analyzing |  |
| 3. |  | What is the data structure used by TCP? | |  | BTL-2 | Understanding |  |
|  |  |  |  |  |  |  |  |
| 4. |  | How TCP software is implemented as process to handle packets? | |  | BTL-4 | Analyzing |  |
|  |  |  |  |  |  |
| 5. |  | When a TCB should be allocated and deallocated. | |  | BTL-3 | Applying |  |
|  |  |  |  |  |  |  |  |
| 6. |  | Define graceful shutdown | |  | BTL-1 | Remembering |  |
|  |  |  |  |  |  |  |  |
| 7. |  | What do you mean by aborting the connection? | |  | BTL-1 | Remembering |  |
|  |  |  |  |  |  |  |  |
| 8. |  | What is the use of window advertisement in a TCP segment? | |  | BTL-3 | Applying |  |
|  |  |  |  |  |  |  |  |
| 9. |  | What are the TCP output message types? | |  | BTL-1 | Remembering |  |
|  |  |  |  |  |  |  |  |
| 10. |  | Define Initial Sequence Number? | |  | BTL-1 | Remembering |  |
|  |  |  |  |  |  |  |  |
| 11. |  | What is the need of timed delay after closing a TCP connection? | |  | BTL-3 | Applying |  |
|  |  |  |  |  |  |  |  |
| 12. |  | Which field indicates the length of the TCP? | |  | BTL-5 | Evaluating |  |
|  |  |  | |  |  |  |  |
| 13. |  | Illustrate the use of pseudo header? |  |  | BTL-2 | Understanding |  |
|  |  |  | | |  |  |  |
| 14. |  | Discuss about the various data structures used in TCP implementation | | | BTL-4 | Analyzing |  |
| 15. |  | Show the TCP segment format. | |  | BTL-1 | Remembering |  |
| 16. |  | Explain the TCP finite state machine and it implementation | |  | BTL-5 | Evaluating |  |
| 17. |  | What is mean by transmission control blocks | |  | BTL-2 | Understanding |  |
| 18. |  | How is input and output processing implemented in TCP? | |  | BTL-6 | Creating |  |
| 19. |  | What is mutual exclusion? | |  | BTL-2 | Understanding |  |
| 20. |  | Discuss the function of finite state machine? | |  | BTL-6 | Creating |  |
|  |  |  | **PART - B** |  |  |  |  |
|  |  |  |  |  |  |  |  |
| 1. |  | Write down the appropriate data structure for TCP input and output | |  | BTL-5 | Evaluating |  |
|  |  |  |  |
|  |  | processing and explain | | (13) |  |
|  |  |  |  |  |

1. Write notes on

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | i) TCB | (7) | BTL-1 | Remembering |  |
|  | ii) Mutual exclusion in TCP data processing. | (6) |  |  |  |
| 3. | Discuss the operation of TCP using finite state machine and its |  | BTL-3 | Applying |  |
|  |  |  |
|  | performance | (13). |  |
|  |  |  |  |
| 4. | How is input and output processing implemented in TCP. | (13) | BTL-4 | Analyzing |  |

1. With the help of FSM, list the events which will move from one state to

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| other state. In each state, give procedures for handling different types of | | | | | | | | BTL-6 | Creating |  |
| incoming | segments | and | action | taken | for | each | input. |  |
|  |  |  |
| (13) |  |  |  |  |  |  |  |  |  |  |

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|  | 6. |  | Design a network that makes use of | sliding window protocol and | |  |  |  |  |  |
|  |  |  | explain detail the protocol used |  | (13) |  | BTL-4 |  | Analyzing |  |
|  | 7. |  | What is Check sum? How to calculate TCP checksum and the TCP | |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  | Pseudo Header. |  | (13) |  | BTL-4 |  | Analyzing |  |
|  | 8. |  | Explain in detail about various output states of TCP. | | (13) |  | BTL-1 |  | Remembering |  |
|  | 9. |  | (i)Explain the various data structures used in TCP implementation. | | (7) |  | BTL-3 |  | Applying |  |
|  |  |  | (ii)What is Transmission Control Blocks? Explain its operations. | | (6) |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 10. |  | Write the code for TCP/IP program to do output processing to the | |  |  | BTL-3 |  | Applying |  |
|  |  |  | socket in Networking. |  | (13) |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | 11. |  | Explain about data structures used for input processing. | | (13) |  | BTL-2 |  | Understanding |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 12. |  | Mention the various output messages in TCP. Explain in detail. | | (13) |  | BTL-1 |  | Remembering |  |
|  | 13. |  | Explain about Output processing in Transmission Control Protocol. (13) | | |  | BTL-1 |  | Remembering |  |
|  |  |  |  | |  |  |  |  |  |  |
|  | 14 |  | (i)Describe the procedure for finite state machine implementation. | | (7) |  | BTL-2 |  | Understanding |  |
|  |  | (ii)Explain how to compute TCP length. |  | (6) |  |  |  |
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|  |  |  | **Part-C** | |  |  |  |  |  |  |
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|  | **Q.No** |  | **Questions** | |  |  | **Level** |  | **Competence** |  |
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|  | 1 |  | Explain with sketch about finite state machine implementation of TCP | | |  | BTL-5 |  | Evaluating |  |
|  |  |  | Input Processing. | (15) | |  |  |  |  |  |
|  |  |  |  | | |  |  |  |  |  |
|  | 2 |  | Explain the Mutual Exclusion implemented in tcp output processing. | | |  | BTL-5 |  | Evaluating |  |
|  |  |  | (15) |  |  |  |  |  |  |  |
|  | 3 |  | Write the procedure to handling an segment in TCP input processing. | | |  | BTL-6 |  | Creating |  |
|  |  |  | (15) |  |  |  |  |  |  |  |
|  | 4 |  | Write the procedure to implement various states in TCP | | output |  | BTL-6 |  | Creating |  |
|  |  |  | processing. | (15) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |

**UNIT V - TCP IMPLEMENTATION II**

Timers – events and messages – timer process – deleting and inserting timer event – flow control and adaptive retransmission– congestion avoidance and control – urgent data processing and push function.

**PART - A**

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| **Q.N** | **Questions** | **BT** | **Competence** |  |
| 1. | What is the need for adaptive retransmission? | BTL-2 | Understanding |  |
| 2. | Illustrate a scenario in which slow start in TCP congestion. | BTL-3 | Applying |  |
| 3. | What the field urgent pointer contains? | BTL-2 | Understanding |  |
|  |  |  |  |  |
| 4. | What is impact of congestion? | BTL-1 | Remembering |  |
| 5. | Define urgent data. | BTL-1 | Remembering |  |
| 6. | What is the difference between congestion control and flow control? | BTL-1 | Remembering |  |
| 7. | List some ways to deal with congestion. | BTL-4 | Analyzing |  |
|  |  |
| 8. | Define ‘cumulative Ack’ | BTL-1 | Remembering |  |

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| 9. | Create the possible ways by which TCP adaptive retransmission can be | BTL-6 | Creating |  |
|  | tuned |  |
|  |  |  |  |
| 10. | Show the implementation of a timer process | BTL-3 | Applying |  |
| 11. | What are the different timers used by TCP? | BTL-1 | Remembering |  |
| 12. | What is the data structure used to store timer events. | BTL-5 | Evaluating |  |
| 13. | Explain urgent data processing ? | BTL-4 | Analyzing |  |
| 14. | What are the tuning adaptive retransmission in TCP | BTL-5 | Evaluating |  |
| 15. | What is the use of window advertisement in a TCP segment. | BTL-1 | Remembering |  |
| 16. | What are the two different ways of handling Urgent Data? | BTL-4 | Analyzing |  |
| 17. | How is congestion avoidance and control done in TCP? Give its | BTL-6 | Creating |  |
|  | implementation |  |
|  |  |  |  |
| 18. | What do you mean by push function? | BTL-2 | Understanding |  |
| 19. | Explain deleting and inserting timer event in TCP? | BTL-3 | Applying |  |
| 20. | List the various congestion control techniques in TCP. | BTL-2 | Understanding |  |

**PART - B**

1. (i)Outline the concept of flow control and adaptive retransmission in

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|  | TCP. | (7) | BTL-3 | Applying |  |
|  | (ii)Write the procedure for inserting and deleting timer event. | (6) |  |  |  |
|  |  |  |  |  |  |
| 2. | Elaborate on TCP congestion control and avoidance mechanisms | (13) | BTL-1 | Remembering |  |
| 3. | (i). Give the implementation of timer process. | (7) | BTL-5 | Evaluating |  |
|  |  |
|  | (ii) How is the push function implemented. | (6) |  |
|  |  |  |  |

1. How is congestion avoidance and control done in T CP? Give its

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| implementation | (13) | BTL-4 | Analyzing |  |
| 5. (i)Discuss about stop and wait protocol with an example | (7) | BTL-2 | Understanding |  |
| (ii)Explain sliding window flow control mechanism with an example. (6) | |  |
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1. Explain the original,Karn/Patridge and Jacobson/karel’s

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| algorithms of adaptive retransmission in TCP. | (13) | BTL-4 | Analyzing |  |
|  |  |  |
| 7. Create a data structures for maintaining multiple local and global timers. | | BTL-2 | Creating |  |
| (13) |  |  |
|  |  |  |  |

1. What are the two methods that control the flow of data across

|  |  |  |  |  |  |
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|  | communication links. | (13) | BTL-4 | Analyzing |  |
| 9. | (i)Discuss the use of a buffer at the receiver in flow control. |  |  |  |  |
|  |  | BTL-2 | Understanding |  |
|  | (7) |  |  |
|  | (ii)What is the purpose of TCP push Operation. | (6) |  |  |  |
| 10. | (i)Difference between flow control and Congestion Control with |  |  |  |  |
|  | examples | (7) | BTL-3 | Applying |  |
|  | (ii)Write the coding for implementation of push function. | (6) |  |  |  |
|  |  | |  |  |  |
| 11. | Describe about how to process a urgent data in Transmission Control | | BTL-1 | Remembering |  |
|  | Protocol. | (13) |  |
|  |  |  |  |
|  |  |  |  |  |  |
| 12. | Explain Fast Retransmit and Fast Recovery Algorithms in TCP. | (13) | BTL-1 | Remembering |  |
|  |  |  |  |

1. Explain in detail about flow control and adaptive retransmission in TCP.
   1. BTL-2Understanding

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|  | 14. | What is meant by silly window syndrome? How do you avoid | |  |  | BTL-3 |  | Applying |  |
|  |  | explain in detail. | | (13) |  |  |  |
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|  |  |  | **Part-C** |  |  |  |  |  |  |
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|  | **Q.No** |  | **Questions** |  |  | **Level** |  | **Competence** |  |
|  |  |  |  | |  |  |  |  |  |
|  | 1 |  | List the major features of the service provided by TCP, Briefly explain | |  | BTL-5 |  | Evaluating |  |
|  |  |  | how congestion control is done in TCP. | (15) |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | 2 |  | Discuss in detail about congestion avoidance in TCP like |  |  | BTL-5 |  | Evaluating |  |
|  |  |  | i) DEC bit | (8) |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  | ii) Source based congestion avoidance. | (7) |  |  |  |  |  |
|  | 3 |  | Describe the adaptive transmission mechanism and how it has | |  | BTL-6 |  | Creating |  |
|  |  |  | evolved time as the Internet community has gained more | |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  | experience using TCP. | (15) |  |  |  |  |  |
|  | 4 |  | Explain congestion avoidance using random early detection in | |  | BTL-4 |  | Analyzing |  |
|  |  |  | transport layer with an example. | (15) |  |  |  |
|  |  |  |  |  |  |  |  |