21CS52 SIMP Questions -21SCHEME

BY TIE REVIEW TEAM

MODULE -1 : Study any 6 Questions

1. Explain in detail (i) types of networks (ii)Protocol Hierarchies (iii) Design issues for the layer
2. Distinguish between Connection-Oriented and Connectionless Service.
3. Write a note on the following:
   i) Service Primitives
   ii) The Relationship of Services to Protocols.
4. Explain OSI Reference Model with a neat diagram, also compare TCP/IP and OSI Reference Model
5. Describe a TCP/IP Reference Model.
6. Explain the features, differentiation of LAN,MAN,WAN and advantages of each
7. Write a note on following guided transmission media:
   i) Coaxial Cable ii) Fiber Optics
8. Explain in detail about Wireless transmission.
   i) Electromagnetic Spectrum ii) Radio transmission

MODULE -2 : Study any 6 Questions

1. Explain the following
   (i)Services Provided from Data Link Layer to Network Layer
   (ii)Data Link layer design issues. – Framing, Error Control, Flow control.
2. What are the key considerations and techniques involved in implementing error correcting codes at the data link layer, and how do these codes contribute to ensuring reliable communication over unreliable channels?
3. **Suppose you have the following three 16-bit words**
   0110011001100000,
   0101010101010101,

1000111100001100.

Find the checksum. How does the receiver detect errors?

Is it possible that 1-bit errors will go undetected?

4. **Write a program for error detecting code using CRC-CCITT (16- bits).**
5. **A message that is to be transmitted is represented by the polynomial $M(x) = x^5 + x^4 + x$ with a generating prime polynomial $G(x) = x^3 + x^2 + 1$. Generate CRC code, C(x) which is to be appended to M(x).**
6. What are the fundamental characteristics and operational principles of a Simplex Stop and Wait Protocol within elementary data link protocols?
7. Explain Sliding window protocols. - Go-Back-N and Selective repeat protocols
8. What are the basic assumptions for dynamic channel allocation, contrasting with the concept of static channel allocation?
9. Can you explain the key features and operational principles of Carrier Sense Multiple Access (CSMA) protocols, ALOHA, Collision-Free Protocols, and Wireless LAN Protocol?

MODULE -3 : Study any 5 Questions

1. Explain Network Layer Design Issues- Wrt Addressing,routing,fragmentation,Internetworking error handling,Packet forwarding
2. Explain the following routing algorithms

   (i)Distance Vector algorithm using three nodes network

   (ii)Link state routing algorithm with example

   Write short notes on - not imp

   (i)Path vector routing (ii)Hierarchical routing (iii)Adaptive routing -3M each
3. Write a program to find the shortest path between vertices using Bellman-ford algorithm.
4. Explain the following wrt Congestion control algorithms

   (i)Traffic Throttling in Congestion Control

   (ii)Traffic policing vs Traffic shaping (Application based textbook recommended)

   (iii)Load shedding and admission control (Application based textbook recommended)

(iv)QoS Differentiation (Application based textbook recommended)

(v)Feedback based control vs Load balancing vs Resource reservation wrt Approaches of CC

5. Write a note on the following:
   a. Hierarchical Routing
   b. Broadcast Routing
   c. Multicast Routing
   d. Anycast Routing.
6. Explain

   (i)the steps involved in Routing for Mobile Hosts.

   (ii)How Routing is done in Adhoc Networks.
7. Explain (i) Integrated and Differentiated Services provided to ensure QoS.

   (ii)Traffic Shaping and Packet Scheduling techniques to support QoS. - Skip if you've studied in congestion control algos

MODULE -4 : Study any 6 Questions

1. Write a short note on Transport Service that includes - 20M

   (i)Reliable data delivery - discuss about acknowledgment mechanisms and Retransmission

   (ii)Connection oriented vs Connectionless - TCP vs UDP, also explain connection establishment vs connection release procedure

   (iii)Error detection and correction vs Flow control
2. With state diagram explains a simple connection management scheme using Berkeley Sockets.
3. Write a note on the following:

   (i)Multiplexing and Demultiplexing ii) Crash Recovery

   iii)Segmentation and reassembly iv)Acknowledgment and retransmission
4. Write a program for congestion control using a leaky bucket algorithm.
5. Briefly explain -wrt Internet transport protocol

   (i) User Datagram Protocol.

   (ii) Transmission control protocol

6. Write a note on (i) Remote Procedure Call. (ii)RTP and its header.
7. Explain (i) TCP Service Model (ii)TCP Protocol with its Segment header.
8. Explain Write a brief note on TCP Connection Management Modeling with a finite state machine.

MODULE -5 : Study any 6 Questions

1. Explain the following wrt PNA -
   (i)Client server model (ii)Peer to Peer Model (iii)Socket Programming
   (iv)Application layer protocols - Explain HTTP,SMTP,FTP and DNS
2. Wrt HTTP
   (i)Discuss about Non-Persistant and Persistent Connections with HTTP.
   (ii)Explain HTTP Request and Response Message Format.
3. Write a note on the following- Electronic Mail in the Internet
   (i)SMTP (ii)POP (iii)MIME (iv)IMTP
4. Wrt DNS
   (i)Explain how DNS works and the Services Provided by DNS.,
   (ii)Explain DNS Records and messages.
   (iii) Domain name registration and DNS resolution - Application based from textbook
5. Explain the Transport Services provided by the Internet and is available to applications
6. Explain the interface between the process and the computer network. – 5m
7. Write notes on the following:
   i) Web Caching
   ii) Cookies