CBCS SCHEME

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17CS52

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Many networks, including internet, provide more than one transport layer protocol. When you develop an application you need to choose one of the available transport layer protocol and consider various parameters. Explain the parameters and protocols to be considered while designing an application. **(08 Marks)**

b. True or False :
   i) Processes on two different systems communicate with each other by exchanging messages across the computer networks
   ii) A client servser architecture achieves perfect security
   iii) Socket is a hardware interface through which a process sends message into, and receives messages from the network
   iv) No data loss is tolerated in multimedia applications such as conversational audio/video
   v) Developing a new network application for the internet offen requires one to decide whether to choose UDP or TCP. **(05 Marks)**

c. With a simple sketch, explain how SMTP operate when A send mail to B where mail server of A and B are different. Show the sequence of events. **(07 Marks)**

OR

2 a. HTTPRequest message
   GET/somedir/page.html HTTP/1.1
   HOST : www.someschool.edu
   Connection : close
   User_agent : Mozilla/5.0
   Accept_language : fr
   Interpret the meaning of each line in few sentences. **(05 Marks)**

b. Explain meaning of each line of
   HTTPResponse message given below :
   HTTP/1.1 200 ok
   Connection : close
   Date : Tue, 09 Aug 2011 15 : 44 : 04 GMT
   Server : Apache/2.2.3
   Last modified : Tue, 09 Aug 2011 15 : 11 : 03 GMT
   Content_Length : 6821
   Content_type : text/html
   (data data - - - - -). **(07 Marks)**

c. What is the service provided by DNS system? Explain the meaning of root DNS server, Top Level Domain Servers (TLD), Authoritative DNS servers. Explain the meaning of the following DNS records
   (relay1.bar.foo.com, 145.37.93.126, A)
   (foo.com, mail.bar.foo.com, MX). **(08 Marks)**

Module-2

3 a. State the assumptions in rdt 2.0 and explain the behavior of the stop-and-wait protocol. Draw the FSM of sender and receiver clearly showing the events and action. **(10 Marks)**

   b. Show the operation of GBN protocol of with a sketch. Window size is 4 packets. Show the sequence of sending six packets (pkt0-pkt5) where pkt0 and pkt1 are correctly received and packet (pkt2) 2 is lost. **(10 Marks)**

OR

4 a. With a diagram, explain the TCP segment structure write one line about each field. **(07 Marks)**

   b. Explain TCP connection management with appropriate sketches (three way handshake, closing). Explain use of SYN, FIN, RST. **(07 Marks)**

   c. Explain the flow control service provided by TCP with a simple sketches show the buffer variation and derive the formula for rwnd. Explain how the window information at receiver side is communicated to the sender. **(06 Marks)**

Module-3

5 a. Explain router architecture with a simple sketch. How packet queueing occur at router? **(08 Marks)**

   b. Compare the routing protocols RIP and OSPF. **(04 Marks)**

   c. With a diagram, explain each field in the IPV$_4$ datagram. Write only few sentences about each field. **(08 Marks)**

OR

6 a. Suppose a router receives an IP packet containing 4020 bytes and to be forwarded to an outgoing link with MTU(Maximum Transmission Unit) of 1500 bytes. Assume the IP header is 20 bytes. Show the fragments the router creates and specify relevant values for each fragment (ID, offset and flag) and bytes in each. **(08 Marks)**

   b. Draw the IPV$_6$ datagram format. Indicate two key differences between IPV$_4$ an IPV$_6$ format. **(04 Marks)**

   c. Refer the following network. Find the shortest path from node 'C' to all other nodes using link state algorithm.
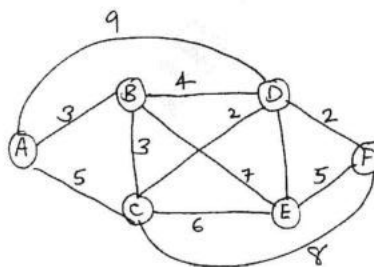

Fig.6(c) **(08 Marks)**

Module-4

7 a. Explain the components in a cellular network. **(10 Marks)**

   b. Explain steps of hand off for a mobile users. **(10 Marks)**

OR

8 a. With a diagram explain two different types of routing approach to mobile node. **(10 Marks)**

   b. Explain agent discovery in mobile IP. Show the ICMP message and registration steps with home agent. **(10 Marks)**

Module-5

9 a. Explain the working of video streaming over HTTP. Explain perfecting, buffer etc and the roles in this process. **(08 Marks)**

b. Explain how DASH helps to improve streaming over different available bandwidth.
(03 Marks)

c. Explain CDN operation with a simple sketch in a scenario a user try to get video from a site NetCinema. **(09 Marks)**

OR

10 a. Explain how classes of service (RoS) is achieved in network with a sketch showing two users, one is doing VOIP and the other browsing. Explain packet marking using IPV_4 header. **(10 Marks)**

b. Explain how leaky bucket algorithm is used to achieve traffic policing. **(10 Marks)**

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