Hall Ticket Number:

Code No. : 32112

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (C.S.E.) III Year II-Semester Main Examinations, May-2017

Computer Networks

Time: 3 hours Max. Marks: 70

*Note: Answer ALL questions in **Part-A** and any **FIVE** from **Part-B***

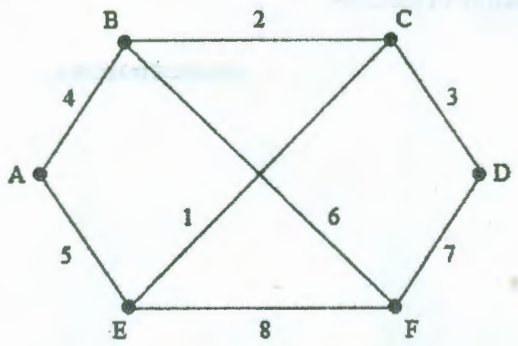
Part-A (10 × 2 = 20 Marks)

1. In many layered protocols, each layer has its own header. Surely it would be more efficient to have a single header at the front of each message with all the control in it than all these separate headers. Why is this not done?
2. How routing in internet differs from that of routing in Ad hoc Networks?
3. Could IP be redesigned to use hardware addresses instead of the 32-bit addresses it currently uses? Why or why not?
4. Why the total segment length field is not there in TCP header where as it is there in UDP? Write also header format of UDP.
5. Define Asynchronous I/O. Give the steps of it along with system calls.
6. Explain the parameter passing issues in RPC along with their solutions in sun RPC.
7. Write briefly about Mobile Web. What are the protocols that facilitate it?
8. In addition to being subject to loss, UDP packets have a maximum length, potentially as low as 576 bytes. What happens when a DNS name to be looked up exceeds this length? Can it be sent in two packets?
9. With reference to DES answer the following:
   i) How many times exclusive OR is performed?
   ii) What is the total number of left circular shifts and permutations in the key generation?
10. Mention the issues in Web security and their mechanisms.

Part-B (5 × 10 = 50 Marks)

11. a) List all the protocols of TCP/IP model along with their acronyms and full forms. How each of these protocol realizes the functions of ISO-OSI reference model. [5]

    b) Consider the network of following figure, Distance vector routing is used, and the following vectors have just come in to router C: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E: (7, 6, 3, 9, 0, 4). The cost of the links from C to B, D, and E, are 6, 3, and 5, respectively. What is C's new routing table? Give both the outgoing line to use and the cost. [5]



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12. a) Which of the TCP header field indicates service number? Draw the header format of TCP and explain the connection establishment in TCP. [5]

    b) An IPv4 datagram has arrived with the following information in the header (in hexadecimal): [5]

    0x 45 00 00 54 00 03 58 50 20 06 00 00 7C 4E 03 02 B4 0E 0F 02

    i) How many bytes of options are there?
    ii) How many fragments are there?
    iii) What is the size of the data?
    iv) How much more time the packet can stay alive?
    v) What is the identification number of the packet?
    vi) What are the addresses of the source and destination?

13. a) Vasavinetd : Vasavinetdsuper server is similar to inetd super server, but with some differences as follows. First of all, it does not either fork() any child service server processes or create individual service function threads, instead, it only servers the connected clients by calling the service functions with appropriate arguments. The services can be connection-oriented or connection-less. You can assume any number of services. Write the flowchart Vasavinetd super server process using socket system calls. [4]

    b) Illustrate Connection-oriented concurrent server process with help of flow chart and write syntax for system calls. [6]

14. a) Give the four scenarios of electronic mail architecture. Explain briefly about each module of a scenario. [5]

    b) An audio streaming server has a one-way "distance" of 100 msec to a media player. It outputs at 1 Mbps. If the media player has a 2-MB buffer, what can you say about the position of the low-water mark and the high-water mark? [5]

15. a) What is SSL? Give its position in layered architecture. What is meant by secure naming? [5]

    b) A message has been encrypted using DES in counter mode. One bit of cipher text in block C_i is accidentally transformed from a 0 to a 1 during transmission. How much plaintext will be garbled as a result? [5]

16. a) Illustrate approaches to Congestion control. [5]

    b) Outline concept of Mobile IP. [5]

17. Answer any ***two*** of the following:

    a) Advanced Socket system calls [5]
    b) Web Applications and Dynamic web pages [5]
    c) Authentication Protocols [5]