

Course Code : CST 413–1/CST 403–1

EVFU/MW – 18 / 6105

**Seventh Semester B. E.(Computer Science and Engineering)
Examination**

Elective - I

WEB ARCHITECTURE AND TECHNOLOGIES

Time : 3 Hours]

[Max. Marks : 60

Instructions to Candidates :—

- (1) All questions carry equal marks. Figures to the right indicate marks.
- (2) Carefully see the internal choices.
- (3) Assume suitable data and illustrate your answer with the help of neat sketches wherever necessary.
- (4) Due credit will be given to neatness.

1.
 - (a) What were the nodes in the first ever Network ? Describe the journey until then in bullet points. 2(CO1)
 - (b) An ISP is granted a block of addresses starting with 120.60.4.0/20. The ISP wants to distribute these blocks to 100 organizations with each organization receiving 8 addresses only. Calculate the subnet mask. Design the subblocks and give the slash notation for first two and last two subblock.

Find out how many addresses are still available after these allocations. 5(CO1)
 - (c) A client uses TCP to send data to a server. The data consist of 16 bytes. Calculate the efficiency of this transmission at the TCP level (ratio of useful bytes to total bytes). Calculate the efficiency of transmission at the IP level. Assume no options for the IP header. 3(CO1)

OR

- (d) How does IPV4 and IPV6 attempt to support real–time traffic ? 3(CO1)

2. (a) A message of 1,000 bytes consists of 90 percent ASCII and 10 percent non-ASCII characters is encoded using :
- quoted-printable.
 - base64

Answer the following questions with respect to given encodings

- (1) How many bytes are in the encoded message ?
- (2) How many bytes are redundant ?
- (3) Calculate the efficiency. 6(CO1)

- (b) What are the functions of the hash, input, prompt and bin commands in ftp ? 4(CO2)

OR

- (c) Explain DNS. Differentiate recursive and Iterative name resolution with neat sketch. 4(CO2)

3. (a) What is a RegExp in Perl ? Write a Perl code segment to replace all occurrences of the string "RKNEC" to "RCOEM" in a given file. 5(CO2)
- (b) Develop the JavaScript to calculate the factorial of a number taken from user and result will be displayed. 5(CO2)

OR

- (c) What are GET and POST methods ? Explain all environment variables which are used in CGI scripts. 5(CO2)

4. (a) Explain Diffie-Hellman key exchange technique.

Suppose that two parties A and B wish to setup a common secret key (Diffie-Hellman key) between themselves using the Diffie-Hellman key exchange technique. They agree on $g=7$ as the modulus and $n=3$ as the primitive root. Party A chooses 2 and party B chooses 5 as their respective secrets. Calculate the Diffie-Hellman key. 7(CO3)

- (b) E-business and Ecommerce are same or different. Give justification. 3(CO3)

OR

- (c) Explain Digital Signature with example. 3(CO3)
5. (a) Highlight any one area which is potentially be influenced more by advancements in virtual reality systems. 5(CO3)
- (b) Explain how multimedia streaming is implemented in Internet. What are the factors that affect the quality of streaming multimedia contents ? 5(CO3)
6. Solve any **Two** :
- (a) What is Client Server architecture ? Why is it suitable for web applications? 5(CO3)
- (b) Explain layered architecture and its various implementations. 5(CO3)
- (c) Differentiate Web Server and Application Server. 5(CO3)