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SC-4333

M. C. A. (Sem. IV) Examination

April / May – 2011

Paper : 403 - Data Communications & Networking Protocols

Time : **3** Hours] [Total Marks :**70**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **M. C. A. (Sem. 4)**

Name of the Subject :

☛ Paper : 403 - Data Communication & Networking Protocols

☛Subject Code No. : **4 3 3 3** ☛Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Use of calculator is permitted.

1 Attempt any **three** out of following **four**. **18**

(1) What do we mean by open systems ? How OSI model justifies the purpose of open systems ? Show the relationship between OSI model and TCP/IP protocol sutie with the help of diagram only. List and explain functions of network layer of OSI Model.

(2) Explain : Loopback Address, Limited Broadcast address, Direct broadcast address, special address, port address, multicast address.

(3) State the limitations of classful addressing and explain how these limitations are overcome by classless addressing. An ISP is granted a block of addrresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to customers as follows :

(a) The first group has 200 medium sized businesses, each needs 128 addresses

(b) The second group has 400 small businesses, each needs 16 addresses

(c) The third group has 2000 households, each needs four addreses. Design the subblocks giving the slash notation for each subblock. Find out how many addresses are still available after these allocations.

(4) Discuss forwarding and routing in classless addressing.

2 Attempt any **three** out of following **four** : 18

(i) "ICMP has been designed to remove deficiencies of IP". Is the statement correct ? Justify your answer.

(ii) What is the use of options part in IP datagram ? Is it of fixed size or variable size ? Describe timestamp and strict source route options.

(iii) Show the IP header format with the help of a diagram. Explain each field of the compulsory part of the header. Which fields of the IP header change from router to router ?

(iv) Explain in brief : netstat, ping, telnet, traceroute.

3 Attempt any **three** out of following **four** : 18

(i) With respect to TCP : Explain SYN flooding attack, Pushing Data, Urgent Data.

(ii) Explain in brief flow control mechanism in TCP. Explain Silly window syndrome created by receiver.

(iii) Explain any three multibyte options in TCP.

(iv) What do we mean by "Metric" of a route in internet ? Explain how the RIP, ck, OSPF and BGP differ in defining the "Metric" values. Explain OSPF.

4 Attempt any **four** out of the following **six** : 16

(1) Compare FTP and TFTP ? Comment on the security features provided by both. List applications of FTP and TFTP.

(2) What is SMTP ? What is its use ? Explain the terms UA, MTA.

(3) What BOOTP ? What is its use ? What is its draw back ? Explain in brief other better protocol designed to remove this draw back.

(4) Briefly state advantages, disadvantages and usage of UDP. Does UDP support any mechanism for error control ? Justify your answer.

(5) Explain the following terms related to DNS message : TC, RD, Rcode, TTL, Offset pointer.

(6) In a datagram, the M bit is zero, the value of HLEN is 5, the value of total length field is 200, and the offset value is 200. What is the number of the first byte and number of last byte in this datagram ? Is this the last fragment, the first fragment, or a middle fragment ? [all numbers mentioned above are in decimal]