MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL 576104
(Constituent College of Manipal University)

FOURTH SEMESTER B.Tech. (CCE) DEGREE END SEMESTER EXAMINATION, MAY – 2016
SUBJECT: TCP/IP PROTOCOL SUITE – ICT-2254
(REVISED CREDIT SYSTEM)

TIME: 3 HOURS   14/05/2016   MAX. MARKS: 50

Instructions to candidates
Answer **ALL** questions.
Missing data, if any, may be suitably assumed.

1A.   Calculate the checksum field value for the IPv4 packet given in the Figure: Q.1A.

4	5	8	28	
	1		0	0
	4	17		
10.12.14.5				
12.6.7.9				

Figure: Q.1A

1B.   With the help of flow chart, explain the working of CSMA/CD method used in wired Ethernet.

1C.   Compare TCP/IP protocol suite with OSI model.   [5+3+2]

2A.   An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 1000 customers as follows:

   i.   The first group has 200 medium size businesses; each needs 128 addresses.

   ii.   The second group has 400 small businesses; each needs 16 addresses.

   iii. The third group has 2000 households; each needs 4 addresses.

   Design the sub blocks and give the slash notation for each sub block. Find out how many addresses are still available after these allocation.

2B.   Calculate the maximum size of the application layer data that can be accommodated when the frame has to be transmitted through a network with MTU size 1500 bytes (Assume that there is no option field in any of the higher layer headers).

2C.   What is the role of proxy ARP?   [5+3+2]

3A.   Using link state routing algorithm used in OSPF find the routing table for router A given in Figure Q.3A. Show step by step procedure to construct the shortest path tree.
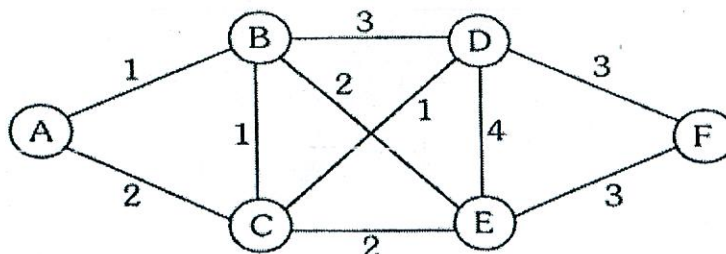

Figure: Q.3A

3B.   List out six rules used in TCP to send acknowledgement segment.

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3C. State whether the following statement is right or wrong. *"DNS uses the services of TCP"*. Justify your answer.

[5+3+2]

4A. A host with IP address 130.23.43.20 and physical address B2.34.55.10.22.10 has a packet to be sent to another host with IP address 130.23.43.25 and physical address A4.6E.F4.59.83.AB (which is unknown to the first host). The two hosts are on the same Ethernet network. Show the ARP request and reply packets encapsulated in Ethernet frames.

4B. In a TCP connection, the initial sequence number at the client site is 2171. The client opens the connection, sends only one segment carrying 1000 bytes of data and closes the connection. What is the value of the sequence number in each segment sent by the client?

i. The SYN segment

ii. The data segment

iii. The FIN segment

4C. What is the difference between inter domain routing and intra domain routing? Specify at least one protocol for each, which makes use of inter domain routing and intra domain routing.

[5+3+2]

5A. Explain the congestion control policies used in TCP.

5B. Explain DHCP operations in the following scenarios.

i. Client and server are in the same network.

ii. Client and server are in the different network.

5C. What is the role of timestamp request, reply and time exceeded messages in case of ICMP.

[5+3+2]