Reg. No.									

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FOURTH SEMESTER B.TECH. (IT) DEGREE MAKE UP SEMESTER EXAMINATION, JUNE - 2016
SUBJECT: COMPUTER NETWORKS (ICT-2201)
(REVISED CREDIT SYSTEM)

TIME: 3 HOURS **28/06/2016** **MAX. MARKS: 50**

Instructions to candidates

- Answer all questions
- Missing data, if any, may be suitably assumed

1A. Explain the steps involved in Link State Routing. List any two drawbacks of this dynamic routing method.

1B. Calculate the checksum at the sender side and receiver side for the following ICMP packet:
Type: Echo Request, Identifier: 123, Sequence Number: 25, Message: Hello

1C. The contents of an IGMP message in hexadecimal notation are: 11 03 EE FF E8 0E 15 08 Answer the following questions

i. What is the type of the message?

ii. What is the checksum?

iii. What is the group IP address?

(5+3+2)

2A. With a neat diagram, explain the different fields present in the IP datagram.

2B. In Figure Q.2B, the data rate is 10 Mbps, the distance between station A and C is 2000 m, and the propagation speed is $2 * 10^8 ms$. Station A starts sending a long frame at time t1 = 0; station C starts sending a long frame at time t2 = 3μs. The size of the frame is long enough to guarantee the detection of collision by both stations. Find:

i. The time when station C hears the collision (t3)

ii. The time when station A hears the collision (t4)

iii. The number of bits station A has sent before detecting the collision.

iv. The number of bits station C has sent before detecting the collision.

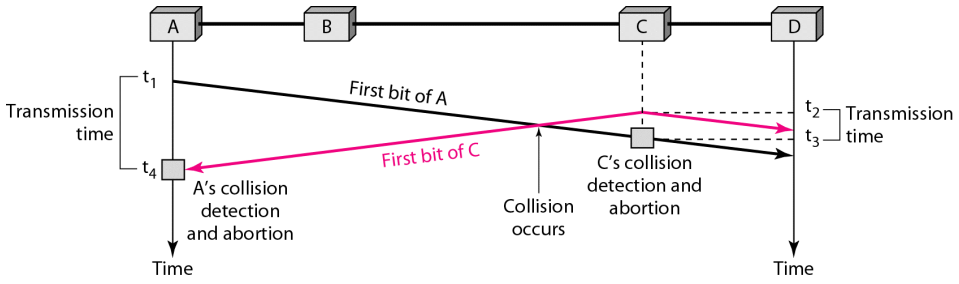

Figure : Q.2B

2C. A router with IP address 125.45.23.12 and Ethernet physical address 23:45:AB:4F:67:CD has received a packet for a host destination with IP address 125.11.78.10 and Ethernet physical address AA:BB:A2:4F:67:CD. Show the entries in the ARP request packet encapsulated as a frame which is sent by the router. Assume no subnetting.

(5+3+2)

3A. With a neat diagram explain the functionalities of each layer in the TCP/IP protocol suite.

3B. Five LANs are inter-connected using source routing bridges as shown in Figure:Q.3B. Assume that the bridges 3 and 4 are not part of the initial spanning tree.

i. Show the single route broadcast frames when S1 wants to learn the route to S2

ii. Show the path of all routes broadcast frames returned by S2.

iii. List all possible routes from S1 to S2.

iv. How many LAN frames are required to learn the possible routes?

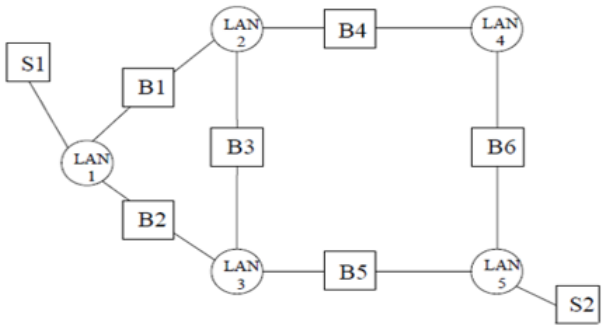

Figure : Q.3B

3C. Bring out the difference between general query and special query message in IGMP. What is the benefit of delayed response strategy in IGMP?

(5+3+2)

4A. A router has following entries in its routing table R1. Draw the network topology.

Mask	Network Address	Next hop address	Interface
/26	140.24.7.192	240.100.1.2	m1
/24	120.24.7.0	200.1.1.1	m0
/16	240.100.0.0	—	m1
/16	100.100.0.0	200.1.1.1	m0
/8	200.0.0.0	—	m1
/0	Default router	200.1.1.2	m1

4B. With necessary schematic, explain the functioning of queues in process-to-process communication using UDP.

4C. Discuss the generic process used in TCP in the calculation of Retransmission Time Out (RTO).

5A. With a neat state transition diagram explain the different events during connection establishment, connection termination, and data transfer from a client to server using Transmission Control Protocol.

5B. With a neat diagram explain the working of the forwarding module in classful addressing without subnetting.

5C. What are the two restrictions for allocating variable length block of addresses in classless addressing?

(5+3+2)