DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER IV [IT]
SUBJECT: (IT407) COMPUTER AND COMMUNICATION NETWORKS

Examination	**: Second Sessional**	**Seat No.**	**: _____**
Date	**: 17/02/2018**	**Day**	**: Saturday**
Time	**: 10:00 to 11:15**	**Max. Marks**	**: 36**

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 **Do as directed.** **[12]**

(a) How do TDMA and CDMA work? **[2]**

(b) A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces 500 frames per second? **[2]**

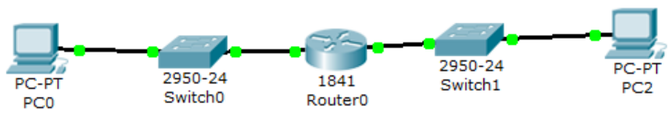
(c) Station A needs to send a message consisting of 9 packets to Station B using a siding window (window size 3) and go-back-n error control strategy. All packets are ready and immediately available for transmission. If every 5th packet that A transmits gets lost (but no acks from B ever get lost), then what is the number of packets that A will transmit for sending the message to B. **[2]**

(d) If in a network, one host has an ip address 200.2.3.65/25. What are network address, first valid ip address, last valid ip address and broadcast address? **[2]**

(e) What is the minimum and maximum size of an Ethernet frame? **[1]**

(f) How many types of frames available in HDLC? Based on which field, system can identify the type of the frame? **[2]**

(g) How many collision domains and broadcast domains are there in the given network? **[1]**



Q.2 Attempt ***Any Two*** from the following questions. **[12]**

(a) Consider a selective repeat sliding window protocol that uses a frame size of 1 Kilobytes to send data on a 1.5 Mbps link with propagation delay of 50 msec. To achieve a link utilization of 60%, the minimum number of bits required to represent the sequence number field is _____. **[6]**

(b) What are the authentication protocols are available in PPP? How do they work? **[6]**

(c) The routing table of a router is shown below : **[6]**

Destination Network	Subnet Mask	Interface
128.96.170.0	255.255.254.0	A
128.96.168.0	255.255.254.0	B
128.96.166.0	255.255.254.0	C
128.96.164.0	255.255.254.0	D
0.0.0.0	Default	E

On which interface router forward the packet addressed 128.96.171.92 and 128.96.167.151 respectively?

Q.3 (a) Why do we need spanning tree protocol in switched LAN? Take one example and show its uses. **[6]**

(b) Write short note on hidden station problem and exposed station problem in wireless LAN. **[4]**

(c) A and B are the only two stations on an Ethernet. Each has a steady queue of frames to send. Both A and B attempt to transmit a frame, collide, and A wins the first backoff race. At the end of this successful transmission by A, both A and B attempt to transmit and collide. What is the possible wait time for A and B? **[2]**

OR

Q.3 (a) A network has a data transmission bandwidth of 20 × 10^6 bits per second. It uses CSMA/CD in the MAC layer. The maximum signal propagation time from one node to another node is 40 microseconds. The minimum size of a frame in the network is _____ bytes. **[4]**

(b) How does communication take place using Point Coordination Function (PCF) and Distributed Coordination Function (DCF) in WLAN? Also discuss types of interframe spaces. **[8]**