(Please write your Exam Roll No.) Exam Roll No. .....

END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] APRIL-MAY 2019

Paper Code: IT-304 **Subject: Computer Networks**

Time : 3 Hours **Maximum Marks :75**

Note: Attempt five questions in all including question no.1 which is compulsory. Select one question from each section.

Q1 Explain briefly the following: **(5x5=25)**

(a) List various guided media and discuss any one guided media in detail. compare guided and unguided media in brief.

(b) Find the subnet mask in each case:
(i) 1024 subnets in class A
(ii) 256 subnets in class B
(iii) 32 subnets in class C
(iv) 4 subnets in class C
(v) 64 subnets in class B.

(c) Differentiate between broadcast, multicast and multiple unicast.

(d) Out of various layers in TCP/IP model, name the layer used for:
(i) Combination of bits into bytes and bytes into frames
(ii) Hop to hop delivery
(iii) Process to Process delivery
(iv) End to end delivery
(v) Segmentation and reassembly of data

(e) Name the error correcting code method. Using the same method, find the bit in which error occurred if.
Original Message to be sent 1001000
Message received after removing redundancy bits 1001100

Section-I

Q2 How is repeater different from an amplifier? How is a hub related to a repeater? Explain four network devices. **(12.5)**

Q3 Name the four basic network topologies and cite an advantage of each type. Explain each topology with example. **(12.5)**

Section-II

Q4 Discuss the responsibilities of data link layer. Explain its design issues in detail. **(12.5)**

Q5 Explain with the help of example why the window size is less than 2^m in Go back NARQ if frames are numbered from from 0 to m-1. Also explain why the window size is less than or equal to 2^{m-1} in Selective Repeat ARQ if frames are numbered from 0 to m-1 with the help of example. **(12.5)**

Section-III

Q6 (a) Give two reasons why networks might use an error correcting code instead of error detection and retransmission. **(6)**

(b) Suppose that an 11-Mbps 802.11 b LAN is transmitting 64-byte frames back to back over a radio channel with a bit error of 10^{-7}. How many framed per second will be damaged on average? **(6.5)**

Q7 Explain five key assumptions for formulating the dynamic channel allocation in LANs and MANs. **(12.5)**

Section-IV

Q8 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. Design the subblocks and give the slash notation for each subblcok. Find out how many addresses are still available after these allocations. **(12.5)**

Q9 (a) A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps? **(8)**

(b) Give an argument why the leaky bucket algorithm should allow just one packet per tick, independent of how large the packet is. **(4.5)**

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