

B.Sc. (I. T.) Sem. - III (CBCS - 2015 Course) : SUMMER - 2019

SUBJECT: DATA NETWORKS

Day: Tuesday
Date: 07/05/2019

Time: 02.30 p.m. to 05.30 p.m.
Max. Marks: 60

S-2019-1275

N.B.:

- 1) Attempt **ANY SIX FULL** questions.
- 2) Figures to the right indicate **FULL** marks
- 3) Draw neat, labeled diagrams **WHEREVER** necessary.

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- Q.1** a) Distinguish between circuit switching, packet switching and message switching. Give examples of where these are used and bring out their advantages and disadvantages. **(06)**
- b) Compare the functions of the layers in the ISO-OSI reference model and the TCP/IP reference model. **(04)**
- Q.2** In Ethernet, what is the relationship between cable length and frame size? Consider setting up a CSMA/CD network running at 1 Gbps over a 1 Km cable with no repeaters. The signal speed in the cable is 200,000 Km/s. What is the minimum frame size? **(10)**
- Q.3** Allocate the IP address block **135.46.56.0/24** among three subnets requiring 60, 60, and 100 addresses respectively. Show the first and last addresses that can be allocated in each block. **(10)**
- Q.4** a) What are Receive Window and Congestion Window in TCP? **(05)**
- b) Differentiate between “packetization” and “fragmentation”. **(05)**
- Q.5** A computer on a 6 Mbps network is regulated by Token Bucket. The bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 Mb. How long can the computer transmit at full 6 Mbps rate? **(10)**
- Q.6** Consider an error-free satellite communication channel is used to send 512-byte data frames in one direction and very short acknowledgements in the other direction. What is the maximum throughput for window sizes 1, 7, 15 and 127? **(10)**
- Q.7** Compare and contrast Distance Vector routing protocols with Link State routing protocols. Give one example of each and bring out their application areas. **(10)**
- Q.8** a) Explain the differences between TCP and UDP and highlight their merits and demerits giving out applications for each. **(05)**
- b) Write a note on IP addressing in mobile networks. **(05)**

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