

B.Sc. (I. T.) Sem. - III (CBCS - 2015 Course) : WINTER - 2018

SUBJECT: DATA NETWORKS

Day: Monday
Date: 19/11/2018

W-2018-1073

Time: 10.00 a.m. to 01.00 p.m.
Max. Marks: 60

N.B.:

- 1) Attempt **ANY FIVE** full questions.
- 2) Make any assumptions required, stating the assumptions made.
- 3) Draw neat, labeled diagrams **WHERE** necessary.
- 4) Figures to the right indicate **FULL** marks.

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- Q.1** a) Two hosts are separated by 10,000 km and are connected by a direct link with 1 Mbps channel capacity. Propagation speed is 2.5×10^8 m/s. Calculate maximum number of bits that can be on the link at any given time and the time taken to send a 400,000 bit file from one host to another. (08)
- b) Describe the different network topologies used in a LAN. (04)
- Q.2** a) Explain the medium access method used by the IEEE 802.3 protocol. What is the significance of minimum frame length? (08)
- b) Compare standard Ethernet and token passing ring LANs giving out their advantages and disadvantages. (04)
- Q.3** a) What is classless addressing in IPv4? List the restrictions (rules) for an allocation of classless IPv4 addresses. (04)
- b) An organization is given the block 17.12.40.0/26. The address space is to be divided among three offices needing 32, 16 and 16 addresses. Determine and appropriate address allocation. (08)
- Q.4** a) Compare the operations of Link State routing with that of Distance Vector routing in the building of network routing tables. Give out the advantages of LS routing over DV routing. (08)
- b) Explain how ICMP can provide a degree of congestion control in an IP network. (04)
- Q.5** a) Explain the three-way handshake mechanism used by TCP. (06)
- b) What do you understand by Maximum Transfer Unit? How does IP cater for varying MTUs? (06)
- Q.6** a) What is congestion control in a network? Briefly explain how TCP carries out congestion control. (08)
- b) Explain why a mail server has two different protocols- one for sending and another for retrieving e-mails (04)
- Q.7** Write short notes on (**ANY TWO**) of the following: (12)
- a) Network Address Translation
 - b) Domain Name System
 - c) IPv6
 - d) Sliding Window Protocol