ourdiu.com | Shared by Md. Shefat Al Mahmud

Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Midterm Examination, Fall-2023
Course Code: CSE313 Course Title: Computer Networks

Level: 3 Term: 1 Batch: 60 (All)

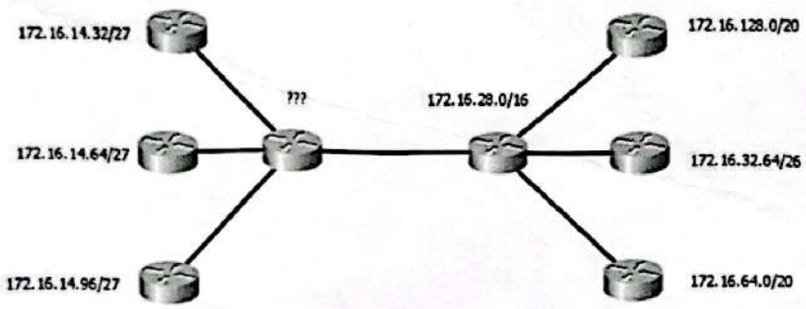
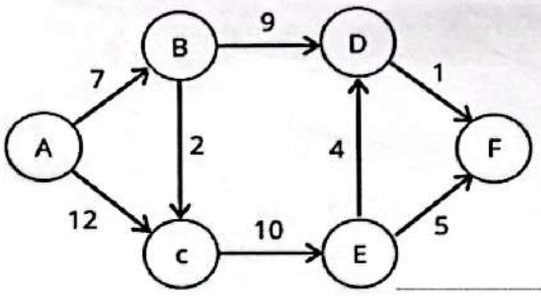
Time: 1 Hour and 30 Minutes **Marks: 25**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1	You are presented with a list of IP addresses and subnet masks. Your task is to carefully examine each entry and determine whether there are any errors or inconsistencies. For each entry, indicate whether it is "Correct" or "Incorrect" and provide a brief explanation of the error if one exists. a) IP Address: 192.168.0.256 Subnet Mask: 255.255.255.192 b) IP Address: 10.10.10.0 Subnet Mask: 255.255.0.0 c) IP Address: 172.16.0.100 Subnet Mask: 255.255.255.0 d) IP Address: 11000000.10101000.00000001.00001010 Subnet Mask: 11111111.11111111.00000000.00000000 e) IP Address: -10.10.10.0 Subnet Mask: 255.0.0.0.	5	CO1
2.	Suppose you are an ISP provider and you have allocated an IP address of 172.16.20.0/16 to a number of groups as below: 1. Group A consists of 50 people and requires 40 usable IP addresses for their devices. 2. Group B consists of 30 people and requires 20 usable IP addresses for their devices. 3. Group C consists of 20 people and requires 10 usable IP addresses for their devices. Using VLSM, design a subnetting scheme that optimizes IP address utilization and minimizes waste. Calculate the following: a) The subnet mask for each group. b) The range of IP addresses in each subnet. c) The number of subnets required for this design. d) The total number of IP addresses wasted. Provide a detailed breakdown of your subnetting plan, including the number of hosts in each subnet, the subnet ranges, and the subnet masks for each group.	5	CO3

ourdiu.com | Shared by Md. Shefat Al Mahmud

3.	You are tasked with determining the network address and broadcast address of a given IP address within a subnet. Assume that the subnet mask is known. Calculate the network address and broadcast address for the following scenario: Given IP Address: 192.168.1.36 Subnet Mask: 255.255.255.224 a) Calculate the network address. b) Calculate the broadcast address. Provide your answers in the standard dotted-decimal notation.	**5**	**CO3**
4.	Examine the network diagram provided and identify the missing IP address labeled '???' on Router's interface. Explain how you arrived at your answer?  	**5**	**CO3**
5.	Apply the Dijkstra algorithm to find the shortest path from point A to point F in the provided figure.  	**5**	**CO3**