Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Examination, Fall 2022

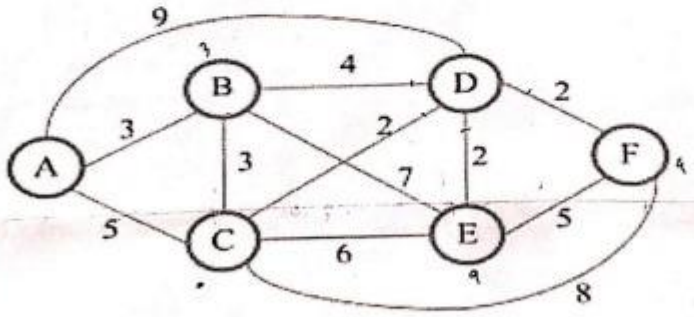
Course Code:CSE313, Course Title: Computer Networks

Level:3 Term: 1 Batch: 57

Time: 01:30 Hrs **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.	An ISP provides a class A network of 110.0.0.0 to an enterprise that requires six networks to support 14, 80, 20, 30, 60, and 120 users. Identify the network mask that would be configured in each workstation and each subnet's network address, broadcast address, host number & 5th host address?	10	CO3
2.	There are a few subnets from 171.91.20.0/24 through 171.91.25.0/24. Identify the summarized subnet and mask address from the given subnet.	5	CO3
3.	Consider the following diagram with the indicated link cost. Use link state algorithm to discover the shortest path from node C. 	5	CO2
4.	What is DNS? Describe its working procedure with a scenario.	5	CO1

Daffodil International University

Department of Computer Science and Engineering

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Midterm Examination, Spring 2023

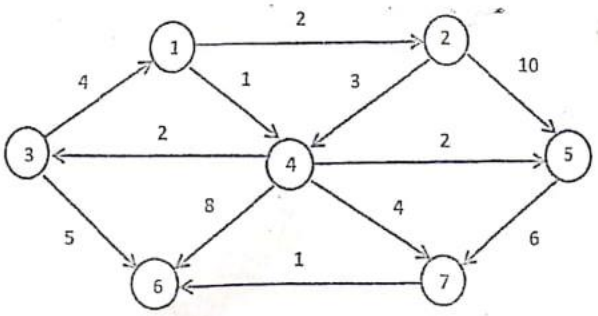
Course Code: CSE 313, Course Title: Computer Networks

Level: 3 Term: 1 Batch: 58 and 59

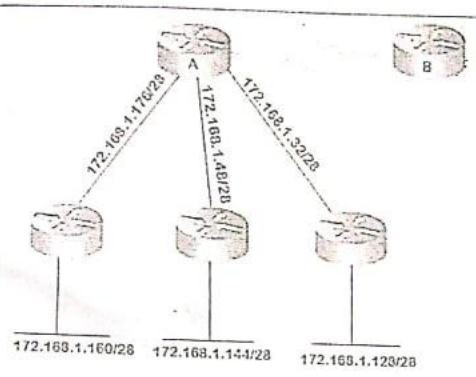
Time: 1.5 Hrs Marks: 25

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.	Suppose, you are a network administrator of an emerging Network company. You have been given an IP address of a network 125.0.0.0. You need to divide this network for five departments of your organization to support 980, 490, 120, 25 and 5 hosts. **Identify** each subnetwork's subnet mask, network address, broadcast address, first valid host and last valid host address.	10	CO3
2.	Consider the following diagram with the indicated link cost. Use Link State routing algorithm to **discover** the shortest path from router 1 to all destinations. 	05	CO3

3.	From the following diagram, determine the Aggregated IP address, CIDR and mask from router A to router B.	05	CO2



4.	Explain the DNS name resolution techniques with suitable diagrams.	05	CO1

Daffodil International University

Faculty of Science & Information Technology

Mid Examination, Spring 2023

Course Code: CSE311: Course Title: Database management System

Sections & Teachers: All

Level: 3 **Term: 1** **Batch: 58, 59**

Time: 1.5 Hrs **Marks: 25**

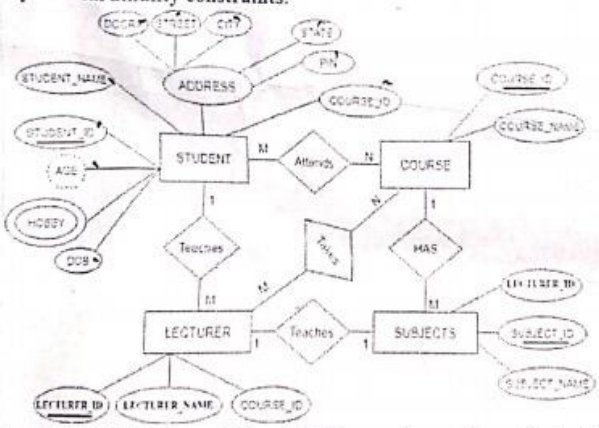
Answer ALL Questions [Optional]

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

1. Bidyanondo Publishers has decided to store information about all their products and peers in a database. They usually publish around 20 books every year. Each book has a title, an ISBN number, author name and price. Also each book has a theme of their own, like "Novel" or "Poetry". There can be more than one authors of a single book. Information of book authors are also stored into the database. Each author has NID number, name, age, and commission amount for each book. One author can publish multiple books by the publisher. The books are sold in many libraries in all over the country. Listed libraries have their unique id, name, owner name, district and phone number. All libraries sell some books from Bidyanondo publisher, but all the books are not sold in every library. Bidyanondo publishers have their own distributers who distribute books to libraries. They are uniquely identified by their trade license number, and also their name, business area and phone numbers are listed in the database. One library takes books from only one distributor and one distributor covers all the libraries inside their business area. CO1

a) Now, design an **ERD** based on the above scenario. Be certain to indicate **primary keys and cardinality constraints.** 6

b)



Convert the **ERD** into a **relational database schema**. Be certain to indicate **primary keys** and **foreign keys**. 5

2. What are relational model constraints? Explain with example. 3 CO1

3. Carefully look at the following database instance and write down the SQL queries for the following questions. CO2

id	name	category	price	quantity
1001	Realme Buds Air 3	Audio	4500	15
1002	Insta360 One X2 Action Camera	Camera	43000	4
1003	OnePlus 7 Pro	Mobile	45000	3
1004	Logitech z623 2.1 Home Theatre	Audio	16500	0
1005	Asus ROG G15 2022	Laptop	215000	2
1006	Apple IPhone 14 Max Pro	Mobile	150000	6
1007	Sony ZV-e10 Mirrorless Camera	Camera	85000	0
1008	Google Pixel 6A	Mobile	85000	2
1009	Xiaomi Haylou LS02 Smart Watch	Watch	5000	14

a) Write an SQL query to view the information for the most expensive mobile phone. 2
b) Write an SQL query for viewing products that are not available. 1
c) Write an SQL Query for showing the average price of products in each category. 2
d) Write an SQL query to view products that costs more than 1,00,000 BDT. 1

4. Carefully look at the following database instance and write the output of the queries followed by them. CO2

id	order	customer	price	date
1001	Chillox Burgers	Rahat	450	2023-02-23
1002	Chillox Masala Chicken	Ashik	150	2023-02-15
1003	Chillox Burgers	Fahim	500	2023-01-25
1004	Chillox Burgers	Ashik	1000	2023-01-19
1005	Chillox Pizza	Ashik	1300	2023-01-16
1006	Chillox Spicy Noodles	Rahat	150	2023-01-14

a) SELECT name, MAX(price) from order ; 1
b) SELECT * FROM order WHERE date BETWEEN '2023-01-15' AND '2023-02-15'; 1
c) SELECT * FROM order WHERE price > (SELECT AVG(price) FROM order); 2
d) SELECT DISTINCT(customer) FROM order; 1

Daffodil International University

Faculty of Science & Information Technology

Mid-Term Examination, Spring 2023

Course Code: CSE411: Course Title: Computer Architecture and Organization

Level: 4 Term: i Batch: 56

Time: 1.5 Hrs **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.	a)	Suppose, Two instructions are in your system. One is [A+(2*B)]-[(C+D)*5], another is [A+(2*D)]+E. The system is designed in the variable-length instruction format. The memory addresses of the two instructions are 122DEF H and 879FF H. **Construct** the equivalent assembly code of the first instruction in a two-operand instruction format.	[3]	CO3
	b)	In the second instruction, the last operand E is stored at first in the given memory address and subsequently, the others are stored. **Identify** the reason behind this.	[4]	
	c)	**Construct** the organization of the computer system which was invented from the motivation of Babbage's Difference Engine.	[3]	
2.	a)	Two students were asked to design an adder of two bits. Their teacher gives them two numbers as their input string to test their system. The numbers are $(4134.6875)_{10}$, $(ABCD.EF)_{16}$ respectively. By doing the necessary calculation, they constructed the adder. **Show** the given numbers in one number system, then convert them into a machine-readable number system.	[4]	CO1
	b)	**Define** the types of equipment that were used for computation before inventing electronic computers.	[2]	
	c)	**Which** computer was used to transfer information between the CPU and the main memory?	[2]	
3.	a)	Integrated circuits can allow more transistors to make a system in a tiny piece of chip. **Illustrate** the structure from which generation IC is invented.	[3]	CO2
	b)	To improve the performance in the case of Programming, **demonstrate** two advanced features of the commercial microprocessor.	[4]	

Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science and Engineering
Mid Semester Examination, Spring-2024

Course Code: CSE315 Course Title: Introduction to Data Science
Level: 3 Term: 1

Exam Duration: 1.5 Hours **Marks: 25**

7.96710^3

Answer ALL Questions [~~Optional~~]

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

1.	a)	A technology company claims that the average time it takes its software engineers to resolve a specific type of coding issue is 120 minutes. The company's manager decided to test this claim by collecting samples from 25 software engineers who recently worked on the same type of coding issue. The average time to resolve the issue in the sample was found to be 115 minutes, with a standard deviation of 10 minutes. It is assumed that the time to resolve coding issues follows a normal distribution. Test the company's claim at a 98% confidence level ($\alpha = 0.02$). Formulate the null and alternative hypotheses, perform the hypothesis test, and interpret the results. **Determine** whether there is sufficient evidence to reject the company's claim about the average resolution time for this coding issue.	[5]	CO1
	b)	As a market researcher employed by a retail company aiming to evaluate customer satisfaction in its diverse store locations, which span urban to suburban areas, your task is to develop an effective sampling strategy. The management places specific emphasis on comprehending customer satisfaction levels across these varied store locations. Outline your proposed sampling strategy, taking into account factors such as geographical location, store size, and customer demographics. **Justify** your selection of a sampling method by providing reasons for its appropriateness in this context.	[3]	CO1

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-2.3	.01072	.01044	.01017	.00990	.00964	.00939	.00914	.00889	.00866	.00842
-2.4	.00820	.00798	.00776	.00755	.00734	.00714	.00695	.00676	.00657	.00639
-2.5	.00621	.00604	.00587	.00570	.00554	.00539	.00523	.00508	.00494	.00480

2.	a)	Suppose you are a teacher and have collected exam scores from your class of 40 students. The scores are as follows: 78, 85, 92, 96, 82, 88, 75, 98, 82, 85, 104, 89, 95, 90, 86, 83, 80, 94, 87, 79, 82, 93, 87, 98, 81, 85, 87, 91, 84, 79, 88, 97, 86, 82, 99, 83, 86, 110, 84, 89. I. **Employ** suitable statistical techniques to pinpoint any potential outliers within the dataset of exam scores. Clearly articulate the criteria or method employed for the identification of outliers. II. **Analyze** how the existence of outliers may impact measures such as the mean and standard deviation of the exam scores.	[2.5 +2.5]	CO1
	b)	Suppose you have collected data on the monthly sales (in thousands of dollars) and advertising expenses (in thousands of dollars) for a sample of 20 retail stores over the past year. The dataset is as follows: **Determine** the correlation coefficient between monthly sales and advertising expenses. Explain the significance of the result in relation to the strength and direction of the association between these two variables.	[4]	CO1

Store	Monthly Sales	Advertising Expenses
1	150	10
2	120	8
3	100	12
4	220	13
5	240	12
6	200	12
7	150	15
8	110	16

Let's consider the following dataset to predict whether we can pet an animal or not. All the features have equal importance. [8] CO2

	Animals	Size of Animal	Body Color	Can we Pet them
0	Dog	Medium	Black	Yes
1	Dog	Big	White	No
2	Rat	Small	White	Yes
3	Cow	Big	White	Yes
4	Cow	Small	Brown	No
5	Cow	Big	Black	Yes
6	Rat	Big	Brown	No
7	Dog	Small	Brown	Yes
8	Dog	Medium	Brown	Yes
9	Cow	Medium	White	No
10	Dog	Small	Black	Yes
11	Rat	Medium	Black	No
12	Rat	Small	Brown	No
13	Cow	Big	White	Yes

Calculate the prediction for the following test dataset, **test = (Cow, Medium, Black)** to predict the animal will be pet or not.

Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Examination, Spring-2023

Course Code: CSE233, Course Title: Object Oriented Programming II

Level: 3, 2 Term: 1, 3 Batch: 59, 60

Time: 1.5 hrs **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.	Consider the following random items code of groceries. **d = 181,178,187,182,192,189,202,201** The concept of dataset is crucial for modern intelligence systems. Initially, we need to process any data using basic programming concepts such as statistical analysis. Here providing data is also part of that concept which is provided in your class lecture.			**CO2**
	a)	**Create** a list constructor for the provided dataset.	2	
	b)	**Develop** a function for the data where the function will regenerate the values in reverse and sorted way following all the necessary requirements.	5	
	c)	**Compare** between list and array.	3	
2.	Consider the following scenario for the Chatgpt **You:** Hi! **Chatgpt:** Hi! What can I do now? **You:** Do you know me? **Chatgpt:** You are from Daffodil International University. You are currently studying 5th semester. **You:** Thanks for your information. **Chatgpt:** Thanks for your gratitude. You know that chatgpt is a complex artificial system. And it requires a more powerful system such as a supercomputer. You have no development knowledge of a chatgpt but you have the basic knowledge of object oriented programming II. Now you need to implement some concepts to develop the demo chatgpt.			**CO1**
	a)	**Construct** a function to build the demo Chatgpt and all necessary input will take form the user as their wishes.	5	
	b)	**Justify** the line from your demo chatgpt "***Chatgpt is better than human***".	3	
	c)	**Explain** the process to change the word "**5th**" to "**7th**" in the given string.	2	
3.	Let's consider two different list K = [1001,1002,1003,1004,1005] V = ["USA", "Canada", "China", "Japan", "UK"] **Propose** a function to convert two lists into a dictionary using python script.		5	**CO3**