



# Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Examination, Spring-2023

Course Code: MAT101, Course Title: Mathematics-I

Level: L1 Term: T1, Sections: All, Batch: 64

Time: 1 Hour and 30 Minutes

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.	a)	Find the prime factorization of 3280 using a tree diagram, and Find all the factors, also find the sum of its composite factors.	[3]	CO1
	b)	Find the H.C.F & L.C.M of 0.65, 30.5, and 5.1.	[2]	
2.	a)	Evaluate by using the properties of radicals : $\sqrt{7056}$	[2]	CO2
	b)	Evaluate by using the properties of radicals $\sqrt{8052} + \sqrt{131} + \sqrt{169}$	[3]	
3.		Solve the equation $x^4 - 16x^3 + 86x^2 - 176x + 105 = 0$ By using Remainder theorem.	[5]	CO2
4.	a)	Find the Maximum and Minimum values of the following functions: $f(x) = x^5 - 5x^4 + 5x^3 - 1$	[3]	CO3
	b)	Find $\frac{dy}{dx}$ if $y = x^2 \tan^{-1} x$	[2]	
5.	a)	Evaluate $\frac{dy}{dx}$ if $x = t - \sqrt{1 - t^2}$ and $y = e^{\sin^{-1} t}$	[3]	CO3
	b)	Evaluate $\frac{dy}{dx}$ if $y = e^{\tan x} \sin(e^x)$	[2]	



**Daffodil International University**  
 Department of Computer Science and Engineering  
 Faculty of Science & Information Technology  
**Mid-Term Examination, Spring 2023**

Course Code: **PHY101**

Level: 1 Term: 1

Time: 1.5 Hours (90 Min.)



Course Title: **Physics-I**

Batch: 64

Marks: 25

**Answer ALL Questions**

1.	<p>(a) Define translational motion.          (b) What is meant by trajectory of a projectile? Show the sketch of a trajectory.          (c) Define work.          (d) What do you mean by phase of a wave?          (e) What is damped vibration?</p>	<p>[Marks]  <math>[1 \times 5 = 5]</math></p>	<b>CO-1</b>
2.	<p>(a) By defining projectile motion show that the time of flight of a projectile is twice the time to ascend to its maximum height.          (b) Show that the moment of inertia of a circular disc is <math>I = \frac{1}{2} Mr^2</math>, when an axis perpendicular to its plane passing through the center. Here, <math>M</math> is the mass and <math>r</math> is the radius of the disc.          (c) From proper mathematical analysis, show that for a particle executing simple harmonic motion the maximum kinetic energy (<math>E_k^{max}</math>) = maximum potential energy (<math>E_p^{max}</math>) = its total energy (<math>E_{total}</math>).</p>	<p>[Marks]  <math>[3+3+4 = 10]</math></p>	<b>CO-2</b>
3.	<p>(a) Determine the recoil velocity of a gun of mass 4.5 kg when a bullet of mass 10 gm is shot with 400 m/s from the gun.          (b) In a contest to drop a package on a target, one contest's plane is flying at a constant horizontal velocity of 360 km/hr. and at a constant height of 725 m toward a point directly above the target. By using formula of horizontally projected projectile determine the angle of sight <math>\phi</math> of the pilot's line of sight to strike the target?          (c) A 75 kg box is pulled by 460 N force at an angle of 30 deg. with the ground. Determine the box's acceleration if the coefficient of sliding friction is 0.65.          (d) The displacement of a particle executing simple harmonic vibration is expressed by <math>y = 3 \sin (31.416t + \Phi)</math>. If the displacement at 0 sec is 6 mm. By solving the equation determine the followings:              (i) amplitude of motion              (ii) the time period of vibration</p>	<p>[Marks]  <math>[2+3+3+2 = 10]</math></p>	<b>CO-3</b>



Daffodil International University  
Faculty of Science & Information Technology  
Mid Term Examination, Spring 2023

Course Code: CSE112 Course Title: Computer Fundamentals  
Level 1 Term 1 Batch: 64

Marks: 25

Time: 1Hr 30min

**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)	Draw the block diagram to illustrate the basic organization of a computer system and explain the functions of various units.	[3]	CO1
	b)	Compare impact and non-impact printers.	[2]	
2.	a)	How does the I/O devices interact with the computer system? Give some example of I/O devices.	[3]	
	b)	Write short note: ChatGPT, OMR	[2]	
3.	a)	Explain- Why data is important? Depict how data transform into information.	[3]	CO2
	b)	Which generation of computer supports AI? What are the key concept of 4IR?	[2]	
4.	a)	Perform the following number conversion: i. $(1423)_5 = (?)_9$ ii. $(2A9D)_{16} = (?)_8$	[2]	
	b)	i. Computer cannot perform subtraction as human. It uses additive approach to do so. Now perform subtraction $78_{10}$ from $52_{10}$ using the additive approach. ii. Divide $11011_2$ by $101_2$	[4]	
	c)	Show- how can we represent 121.3750 into an IEEE 754 binary 32 bit format?	[4]	



Daffodil International University  
Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Midterm Examination, Spring 2023  
Course Code: ENG 101  
Course Title: Basic Functional English and English Spoken  
L1T1 Batch: 64

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

<b>1. Use the right form of verbs.</b>	<b><math>0.5 \times 10 = 5</math> Marks</b>	<b>CO1</b>
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Would you mind (a) --- (receive) my letter. I am extremely sorry for (b) --- (be) late. Had I had any message about you illness, I (c) --- (visit) you. Believe me, since my return from Australia, I have got myself (d) --- (engage) in raising awareness among people (e) --- (send) their daughters to school. In this country, girls (f) --- (deprive) of proper education and guidance. Due to lack of education, they (g) --- (not know) what they (h) --- (need). For years, they (i) --- (neglect) in society. So, they should (j) --- (teach) that they are equal to men.

2. The following paragraph contains errors in subject-verb agreement. Find out the errors and correct them, and write only the corrected form of verbs against the number where they occur.	$0.5 \times 10 = 5$ Marks	CO1
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- a) Gender inequality is a barrier to the overall development of a country. b) Gender equality refers to the condition in which both men and women are equally and fairly in all circumstances. c) Without ensuring the participation of both, the social and economic development cannot imagine. d) Elimination of gender disparity are a demand of the day with a view to establishment of human rights. e) Our government already have taken some initiatives in different sectors so that women can be kept pace with men. f) But our social set up creates a barrier in different ways. g) We should broaden our outlook and come forward to eliminating gender inequality from the society. h) We have many initiatives that make education more accessible for girls across the country from pre-school to high school. i) But the truth is, not every girl has the chance to exercise this power that lie within them.



3. Identify the correct part of speech of the following underlined words.

$0.5 \times 10 = 5$  Marks CO1

- a) What are you doing there?
- b) She looked up but didn't see anything.
- c) Rita was very impressed with her results.
- d) Well, I don't think I'll be home before 6.
- e) After lunch let's go out for a coffee.
- f) The play was fantastic.
- g) I helped him carry it.
- h) We have seen this before.
- i) My friend wasn't strong enough to lift his heavy rucksack.
- j) Take your first left then go over the bridge.

4. Listening test will be conducted separately.

5 Marks

CO2

5. Speaking test will be conducted separately.

5 Marks

CO3

again. h)The name Santa Claus evolved from Nick's Dutch nickname, Sinter Klaas, a shortened form of Sint Nikolaas. i)It is said that he gave away all of his inherited wealth and traveled the countryside helped the poor and sick. Gift-giving, mainly centered around children, have been an important part of the Christmas celebration since the holiday's rejuvenation in the early 19th century. j)Stores began to advertise  
k)Christmas shopping in 1820, and by the 1840s, news were creating separate sections for holiday advertisements, which often featured images of the newly-popular Santa Claus.

3. Identify the correct part of speech of the following underlined words.	5x1=5 Marks	CO1
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- a) We are sitting under the tree. *Preposition*
- b) She looked up but didn't see anything. *Adverb*
- c) What are you doing there? *Adverb*
- d) She was angry with him. *adjective*
- e) He has many influential friends. *Noun*

4. Listening test will be conducted separately.	5 Marks	CO2
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5. Speaking test will be conducted separately.	5 Marks	CO3
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**Faculty of Science & Information Technology**  
**Dalibit International University**

Final Examination, Spring 2023

Course Code: CSE112 Course Title: Computer Fundamentals

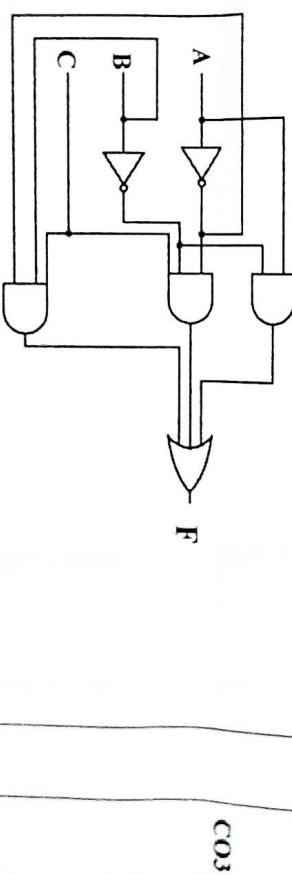
Garcia et al. / *Health Disparities*

Time: 2:00Hrs

MARKS: 40

**Answer ALL** Questions

1. a) Suppose, you are a hardware engineer of a reputed hardware industry. You are given the following circuit that is costly to manufacture. However, as an engineer you have to redesign the circuit in a **cost effective way**. Now, design a cost effective circuit for the following circuit.



2. a) Why is the OS important? Explain- How does the OS provide security to the data and information?

b) To provide the best **speed, scalability, and security**, the IT department is in charge for planning and setting up the network topology. Justify - how will the IT department configure the network topology to ensure **optimal performance and reliability**?

3. a) Suppose you are a software engineer, currently working on a project that requires implementation in C language. Now, write down five

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Daftodil International University

Faculty of Science & Information Technology

Final Examination, Spring 2023

Course Code: CSE112 Course Title: Computer Fundamentals

Level 1 Term 1 Batch: 64

Time: 2:00Hrs

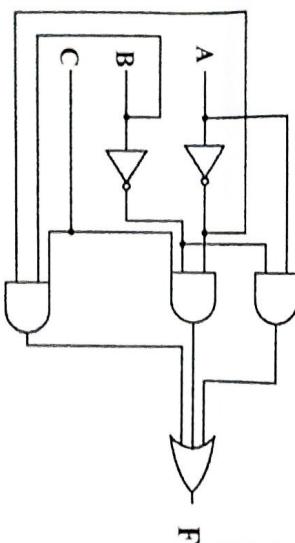
Marks: 40

**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, you are a hardware engineer of a reputed hardware industry. [6]

You are given the following circuit that is costly to manufacture. However, as an engineer you have to redesign the circuit in a **cost effective way**. Now, design a cost effective circuit for the following circuit.



CO3

- b) Now, obtain the truth table for the output expression and compare it with the simplified expression. [4]

2. a) Why is the OS important? Explain- How does the OS provide security to the data and information? [5]
- b) To provide the best **speed, scalability, and security**, the IT department is in charge for planning and setting up the network topology. Justify - how will the IT department configure the network topology to ensure **optimal performance and reliability**? [5]

3. a) Suppose you are a software engineer, currently working on a project that requires implementation in C language. Now, write down five [5] CO4

reserved words and five naming conventions for declaring variables of this language.

- b) Arif participated in a math Olympiad. He has to solve some sort of mathematical problem. One of them is  $A^b$  where A is the base value and it is integer in type and b is the power of A. He must take the value from the user. He can't use any built-in function to solve the problem. Construct the **algorithm** and **flowchart** to solve the problem.

[5]

4. An email was sent by ABC University to inform students about the schedule for their upcoming final exam. Unfortunately, the email was accessed by an unauthorized person who changed the date and time of the exam. Consequently, the students appeared for the exam on the wrong day which led to confusion and chaos.

[10]

In this situation, you need to **identify** the type of attack. **Explain-** What measures can the authority take to prevent similar attacks from happening in the future? Moreover, **which** section(s) of the ICT Act does this attack fall under, and what penalties could the perpetrators face under the Act?

CO1



**Daffodil International University**  
**Department of Computer Science and Engineering**  
**Faculty of Science & Information Technology**  
**Final Examination, Spring 2023**  
**Course Code: ENG 101**  
**Course Title: Basic Functional English and English Spoken**  
**L1T1                  Batch: 64**

**Duration: 2 Hours** **Marks: 40**

**(1.5 hours for grammar section (Q1-Q5))**

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

<b>1. Use the right form of verbs.</b>	<i>0.5x10=5 Marks</i>	<b>CO1</b>
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One very conspicuous change in our society (a) ---- (be) the presence of working women outside the home. Of course, it (b) \_ (acknowledge) that women have always (c) - (work) within the household but this commonly (d) - (count) as 'work'. Even their roles in agricultural societies (e) - (recognize) either. From the urge (1) --- (establish) their own identity many of them are now (g) --- (enter) the outside workforce. They (h) -- (join) a wide range of professions. Moreover, it is not only educated women who (i)--- (opt) to work but women with little or no education (j) - (come) out of their cocoons to become self-reliant.

2. Use article (a/an/the) where necessary. Put a cross (x) where an article is not needed.	$0.5 \times 10 = 5$ Marks	CO1
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Once we went to (a)... hunting in (b)...deep jungle. Many (c) ... beast was moving to and fro. Suddenly we noticed (d)...ewe. It was looking at us. (e)...ewe had (f)... unique beauty. We could not kill (g)...ewe as it would be (h)... unkind deed. In fact, we are not rude by (i)... nature. We returned (j)... home happily for not killing any creature.

3. The following paragraph contains errors in subject-verb agreement. Find out the errors and correct them, and write only the corrected form of verbs against the number where they occur.	$0.5 \times 10 = 5$ Marks	CO1
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- a) The Harry Potter film series are famous all over the world. b) It's based on the books by JK Rowling. c) The first film, *Harry Potter and the Philosopher's Stone*, was released in 2001. d) The whole series consist of eight fantasy films. e) In each film the main character, Harry, is played by Daniel Radcliffe. f) The story begin when 11-year-old orphan Harry discovers that his



Daffodil International University  
Faculty of Science & Information Technology  
Final Examination, Spring 2023

**Course Code: CSE115, Course Title: Introduction to Biology and Chemistry for Computation**

Level: 1      Term: 1      Batch: 64

**Time: 2:00 Hrs**

**Marks: 40**

**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.	<p>Orthologs and paralogs are two fundamentally different types of homologous genes that evolved, respectively, by vertical descent from a single ancestral gene and by duplication. Horse &amp; Zebra belongs to the same family of animals: the Equidae family.</p> <p>Compare ortholog &amp; paralog in terms of Horse &amp; Zebra. Also, Illustrate a keyword Tree for the given sequence of Zebra: CATA</p>	[5]	CO3
2.	<p>Indexing a genome can be explained like indexing a book. If you want to know on which page a certain word appears or a chapter begins, it is much more efficient/faster to look it up in a pre-built index than going through every page of the book until you find it. Same goes for alignments. Indices allow the aligner to narrow down the potential origin of a query sequence within the genome, saving both time and memory.</p> <p>Suppose a bioinformatician has given you the following sequence: ACAAACG</p>	CO3	
	<p>a)</p> <p>Construct a Borrower Wheeler Matrix (BWM) for the given sequence.</p>	[5]	
	<p>b)</p> <p>Apply LF mapping on the Borrower Wheeler Matrix (BWM) found at solution of question 2(a). Justify your output with the input sequence.</p>	[5]	
3.	<p>Mr. Tom &amp; Mr. Jerry want to experiment with their DNA sequence to find out their differences. Bioinformatician has kept a sample to calculate.</p> <p>Sequence of Mr. Tom: CATGACT</p> <p>Sequence of Mr. Jerry: TAGAC</p> <p>Assume Match Score: +2, Gap Score: -4, Mismatch Score: -2</p> <p>Apply Global Alignment Method to compare these two sequences.</p>	[10]	CO3
4.	<p>Apply FASTA algorithm to discover the similarity between the two sequences:</p> <p>Sequence 1 (Tiger): TAACGAC</p> <p>Sequence 2 (Cat): CAGTAAC</p>	[10]	CO3
5.	<p>There is a popular process which consists of a group of laboratory techniques used to separate the components of a mixture by passing the mixture through a stationary phase. Typically, the sample is suspended in the liquid or gas phase and is separated or identified based on how it flows through or around a liquid or solid phase.</p> <p>Construct the imaginary process with an appropriate figure.</p>	[5]	CO4

Daffodil International University

Department of Computer Science and Engineering

Quiz Test 3, Spring 2023

Course Code: CSE 115, Course Title: Introduction to Biology & Chemistry for Computation  
Marks: 15

Time: 30 Minutes

1.	<p>Two people have their DNA sequence and want to find out their similarities.</p> <p>Sequence of Mr. X: GACTCG</p> <p>Sequence of Mr. Y: TATCG</p> <p>Assum. Match Score: +2, Gap Score: -2, Mismatch Score: -1</p> <p>Apply <u>Local Alignment Method</u> to compare these two sequences.</p>	[8]
2.	<p>Suppose you have the following sequence: CTAATGG</p> <p>(a) Construct a Borrower Wheeler Matrix (BWM) for the given sequence.</p> <p>(b) Find out the Suffix Array from the BWM.</p>	[7]



Daffodil International University  
Faculty of Science & Information Technology  
Final Examination, Spring 2023

**Course Code: CSE113 Course Title: Programming and Problem Solving**

Level: 1 Term: 1 Batch: 64

Marks: 40

Time: 2:00 Hrs

**Answer ALL Questions**

<p>1. Demonstrate the errors by providing the line numbers and reasons why you think they are errors and rewrite the corrected one.</p> <pre> 1. #include&lt;stdio.h&gt; 2. Struct num{ 3.     int a, b; 4. }A[5]; 5. Int main() 6. { 7.     int x; 8.     for(X=0; x&lt;5; x++) 9.         scanf("%d%d", &amp;A[x]-&gt;a, &amp;A[x].b); 10.    for(x=0; x&lt;5, x++) 11.        printf("%05 %05d\n", A[x].a,A[x],b); 12.    return 0; 13. }</pre>	<p>[6]</p>	<p>CO2</p>	
<p>2 Construct the Output for the given codes below (write only the output segment in a box):</p> <p>a)</p> <pre>#include&lt;stdio.h&gt; int main() {     int a, b, *c, *d;     a=22;b=18;     c=&amp;a;d=&amp;b;     printf("a=%d,b=%d,c=%d,d=%d     \n", a,b,*c,*d);     *c += 1;*d +=1;      printf("a=%d,b=%d,c=%d,d=%d     \n", a,b,*c,*d);     return 0; }</pre>	<p>b) #include&lt;stdio.h&gt;</p> <pre>void fun(int a) {     while(a%2!=0)     {         printf("Hii         DIU\n");         a /=2;     } } int main() {     fun(11);     return 0; }</pre>	<p>[9]</p>	<p>CO3</p>
<p>c) #include &lt;stdio.h&gt;</p> <pre>int main(void) {     int num[3][3]={33,12,21,34,44,5,6, 22, 18},i, j;     for(i=0; i&lt;3; i++){         for(j=0; j&lt;3;j++){             printf("%d\t", *(num[i][j]));         }         printf("\n");     }     return 0; }</pre>			

3.	Analyze the problem scenarios given below to write a full program for each of the following.	[25]				
a)	<p>Alex, Sam, and David are three friends. Their passion is to become good cricketers, more specifically, good bowlers. Every day, they participate in a cricket match at the academy, and they play in the same team. Their coach announced that in every match, whoever concedes fewer runs will receive a chocolate from the coach as a reward.</p> <p><b>Input:</b> Integers a, b, c which indicate the runs conceded by Alex, Sam and David respectively.</p> <p><b>Output:</b> “X will get chocolate” where X is replaced by Alex, Sam or David based on condition.</p> <table border="1"> <thead> <tr> <th>Sample Input</th><th>Sample Output</th></tr> </thead> <tbody> <tr> <td>20 18 25</td><td>Sam will get chocolate</td></tr> </tbody> </table>	Sample Input	Sample Output	20 18 25	Sam will get chocolate	[5] CO4
Sample Input	Sample Output					
20 18 25	Sam will get chocolate					
b)	<p>Imagine you have N taka when you visit a DIU superstore to buy groceries. Surprisingly, the prices of all the grocery items are unbelievably high. Perplexed by this, you decide to approach the manager for clarification. The manager explains that only the last two digits of the labeled price represent the true cost. Now, let's create a C program to determine whether N taka is sufficient to purchase M items or not.</p> <p><b>Input:</b> An integer <b>N</b> that represents the total money you have. An integer <b>M</b> represents the number of items, followed by labeled prices of <b>M</b> items.</p> <p><b>Output:</b> If <b>N</b> taka is sufficient to buy <b>M</b> items then print “Yess!!Yess!! here we go” else print “Oh!, No”</p> <table border="1"> <thead> <tr> <th>Sample Input</th><th>Sample Output</th></tr> </thead> <tbody> <tr> <td>200 3 1023 1222 155</td><td>Yess!!Yess!! here we go</td></tr> </tbody> </table> <p><b>Hint:</b> If we divide a number (for example 1024) by 1000 you will get the first digit 1 and if you perform a modulus operation on 1024 by 10 you will get the last digit 4.</p>	Sample Input	Sample Output	200 3 1023 1222 155	Yess!!Yess!! here we go	[5]
Sample Input	Sample Output					
200 3 1023 1222 155	Yess!!Yess!! here we go					
c)	Insomnia, which refers to the inability to sleep or maintain restful sleep, has become a significant problem in today's world, especially among the youth population. The fast-paced, technology-driven lifestyle is the main reason behind insomnia.	[5]				

Now you will be given sleep hours for the last three days of N persons. You need to find which person has the lowest average sleep hours and show the sleeping hours of the last three days of that person.

**Input:** An integer N that represents the number of persons, followed by N list of sleep hours, every list contains three numbers that represents the sleeping hours of the past three days of that person.

**Output:** First line of output will contain the average lowest sleep hours up to two decimal places. Second line of output will contain sleep hours of the last three days of that person.

Sample Input	Sample Output
3 7 4.5 9 8 10 8 12 14 12	6.83 7.0 4.5 9.0

- d) Encryption is used to protect data from being stolen, changed, or compromised and works by scrambling data into a secret code. Mr. Dheeman got a secret code that is encrypted. You are a clever programmer and Mr. Dheeman wants help from you to get the real code. Here is a hint for you to get real secret code from the encrypted secret code you need to add 5 with the ascii value of each character. [5]

**Input:** A string that is the encrypted secret code.

**Output:** The real secret code.

Sample Input	Sample Output
Km`hd`m	Premier

- e) Let's finish this section with a recursive problem. All you have to do is write a recursive function named proFun(). The proFun() should print the following series, where the series always starts with numbers **1 and 2**. Then the next number of this series is always the multiplication of the last two numbers before that. For example, the **4th number is 4**, and the **5th number is 8**, and so on. [5]

1 2 2 4 8 32 256 8192 2097152.....

**Input:** An integer N.

**Output:** Nth number of the series

Sample Input	Sample Output
6	32



**Daffodil International University**  
**Department of Computer Science & Engineering**  
**Faculty of Science & Information Technology**  
**Mid-Term Examination Semester: Spring 2023**  
**Course Code: CSE 113 Course Title: Programming & Problem Solving**  
**Level: I Term: I Section: All Batch: L1,T1**

Time: 1.5 hours

Full Marks: 25

*Answer all of the following Questions*

**Q1. Expression Evaluation:**

Illustrate the following expressions in detailed steps where P = 4, Q = 5, R = 2, S = 1 & T = 7. Remember all the variables here are integers. Write each variable's value after **every evaluation** to obtain a full mark.

	CO CO1
--	-----------

	1.5 1.5
--	------------

- a)  $P += ++P + Q \&& R - S / ++T$
- b)  $P *= P + ++Q + T \% S * Q$

**Q2. Demonstrate Error Finding & Bug Fixing:**

	[6] CO2
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- a) How many errors can you find in the following code? Explain the errors by providing the line numbers and reasons why you think they are errors..

	4
--	---

```

1. #include<studio.h>
2. int main(void)
3. {
4.     int a[5] = {97, 98, 99, 100, 101}; x=0;
5.     while(1){
6.         printf("\'%d\' = \'%c\'\n", a[x], a[x]);
7.         printf("\'%d\' = \'%c\'\n", a[x]+1, a[x]+1);
8.         if(a[x]>=101){break;}
9.         x++;
10.    }
11.    return 0;
12. }
```

	2
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- b) Rewrite the code without any errors.

**Q3. Construct the Output for the given codes below (write only the output segment in a box):**

	[4] CO3
--	---------

a) #include <stdio.h>  
int main()  
{ char x = 'Z';  
// Ascii value of 'A' is 65  
for(int a=x;a>='A';a--)  
{  
printf("%c %d\n", a,a);  
if(a < 'U' || a % 2 == 1)  
break;  
} return 0;}

```
b) #include <stdio.h>
int main()
{
    int x=5;
    while(x%2==1)
    {
        printf(" %d \n",--x);
        if(x<=0){break;}
        else if(1){continue;}x--;
    }return 0;
}
```

	2+2
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**Q4. Analyze the problem scenarios given below to write a full program for each of the following**

	112] CO4
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- a) There is a promotion going on that offers you the chance to win complimentary tickets to your preferred vacation spot. You only need to tell them your nickname, your age, and your preferred vacation spot. The issue is that they won't take information that is provided in plain text; instead, they want you to enter your information into a c program, where the nickname, age, and preferred vacation spot are printed on three different lines.

4

Sample Input	Sample Output
NO INPUT	Choton 21 Years Cox's Bazar

- b) Suppose you are dining at home with your 3 siblings including yourself. You ordered four 4 types of food namely Pizza, Pasta, Noodles and Soup. But food distribution becomes a problem as two of your siblings want Pizza and you and the other sibling want Pasta. No one wants to have Noodles or Soup. So, your mother came to your rescue, she said food will be distributed according to body weight. The one who has the highest weight will get Soup, second highest will get Noodles, 3rd highest will get Pasta and the one lowest weight will get the Pizza.

4

**Input:** Four integers W1, W2, W3, W4 are the weight of the 4 siblings from oldest to youngest.

**Output:** Any of these four messages: “Oldest will get X”, “Second oldest will get X”, “Third oldest will get X” and “Youngest will get X”, where x is replaced by Pizza, Pasta, Noodles and Soup.

Sample Input	Sample Output
65 76 45 69	Oldest will get Pasta Second oldest will get Soup Third oldest will get Pizza Youngest will get Noodles

- c) The king of Asgard loves prime numbers. He usually plays brain teasers with prime numbers. One day he came across a problem where you will be given an N list of M integers. The task is to find the highest 2-digit prime number among those lists. As you are good at programming, the king decided to kidnap you in the kingdom of Asgard. The only way out of the planet is to solve the problem which the king is obsessed with. Now write a C program to escape from Asgard.

4

**Input:** An integer number N that defines the number of lists followed by M integers values each representing the number of elements in the list.

**Output:** An element from each list which is the highest 2-digit prime number and “Yes, I am going home.” in the next line. Else show a message “Well, I am stuck here.”

Sample Input	Sample Output
3	79
5	Yes, I am going home.
111 15 16 79 55	Well, I am stuck here.
3	11
22 12 14	Yes, I am going home.
2	
7 11	



Daffodil International University  
Faculty of Science & Information Technology  
Midterm Examination, Spring 2023

**Course Code: CSE115, Course Title: Introduction to Biology and Chemistry for Computation**

Level:1      Term: 1      Batch:64

Time: 1 Hour 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.	Computational chemistry is complementary to experimental chemistry-it will never displace it.  Define computational chemistry. Explain shortly the benefits of computational chemistry.	[5]	CO1
2.	A nucleotide is the basic building block of nucleic acids (RNA and DNA). The “chain termination method”, is a method for determining the nucleotide sequence of DNA. The method was developed by two time Nobel Laureate.  There are three main steps to sequencing. (i) DNA sequence for chain termination (ii) Size separation by gel electrophoresis (iii) Gel analysis & determination of DNA sequence  Illustrate building blocks of Nucleic Acids. Imagine the above-mentioned DNA sequencing method and demonstrate with appropriate figures.	[5]	CO1
3.	Quantum mechanics/molecular mechanics (QM/MM) simulations are a popular approach to study various features of large systems.  a) Define the following Schrödinger's Equation: $H\Psi = E\Psi$ Simplify the equation in terms of total energy of a system.  Distinguish between Molecular Mechanics (MM) & Quantum Mechanics (QM) method. Also analyze the computational cost vs accuracy curve of MM & QM.  b) Illustrate conformational analysis of Butane and analyze the change in energy level with the rotation of the bond.	[5]	CO2
4.	The narrated system is a digital automated industrial control system (ICS) that uses geographically distributed control loops throughout a factory, machine or control area. The goal of the system is to control industrial processes to increase their safety, cost-effectiveness and reliability.  Identify the following system and construct the model with appropriate figure	[5]	CO4



Daffodil International University  
Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Midterm Examination, Fall 2022  
Course Code: ENG 113  
Course Title: Basic Functional English and English Spoken  
L1T1 & L1T2

Duration: 01:30 Hour

Marks: 25

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

1. Use the right form of verbs.	0.5x10=5 Marks	CO1
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Dowry (a) --- (regard) as a great curse in our society. It may (b) --- (compare) to cancer that (c) --- (increase) in our society at a great speed. The fathers of the brides (d) --- (victimize) for dowry. If steps (e) --- (take) against those greedy people, it (f) --- (grasp) our society. It is mainly (g) --- (notice) among the rich who demand dowry with a view to (h) --- (fulfill) their greed. So, we have to (i) --- (develop) morality. The culprits should (j) --- (punish) to put an end to this social curse.

2. The following paragraph contains errors in subject-verb agreement. Find out the errors and correct them, and write only the corrected form of verbs against the number where they occur.	0.5x10=5 Marks	CO1
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- a) According to legend, Santa Claus was a fat old man who visits every house on our planet in about eight hours on one of the coldest nights of the year. b) Santa, as everybody knows, stop for a glass of milk and a cookie at each house along the route. c) He prefer to work unnoticed, so he wears a luminous red suit and travels with a pack of bell-jangling reindeer. d) For reasons that most people does not understand, this jolly old man enters each house not by the front door but through the chimney (whether you has a chimney or not). e) He customarily gives generously to children in wealthy families, and he usually remind poorer children that it's the thought that counts. f) Santa Claus is one of the earliest beliefs that parents try to instill in their children. g) After this absurdity, it's a wonder that any child ever believe in anything.



Daffodil International University  
Faculty of Science & Information Technology  
Final Examination, spring 2023

Course Code: MAT101, Course Title: Mathematics-I  
Level: L1 Term: T1 Batch: 64

Time: 2:00 Hrs

Marks: 40

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)	Evaluate : $\int e^{4x} \sin 5x \, dx$	[5]	CO4
	b)	Evaluate: $\int_0^{\sqrt{7}} \frac{dx}{(7+x^2)^{\frac{3}{2}}}$	[5]	
2.	a)	Solve the integral $\int \frac{2x^3+x^2-x-3}{x(x-1)(2x+3)} \, dx$	[5]	CO3
	b)	Resolve the function into Partial fraction : $\int \frac{(3x^2-x+1) \, dx}{(x+1)(x^2-x+3)}$	[5]	
3.	a)	If $\phi(x, y, z) = 3x^5y - 15y^3z^7$ , Determine $\nabla\phi$ and $\operatorname{div} \operatorname{grad} \phi$ ( $\nabla \cdot \nabla\phi$ ) at the point $(1, -2, -1)$ . <i>or</i>	[5]	CO4
	b)	If $A = xz^3i - 2x^2yzj + 2yz^4k$ , then Determine $\nabla \times (\nabla \times A)$ or (Curl curl A)	[5]	
4.	a)	Determine the value of $\frac{dy}{dx}$ if $y = \frac{1+\tan x}{1+\cos x} + a^x \cos^{-1} x$	[5]	CO4
	b)	Determine $\frac{dy}{dx}$ if $(\tan x)^y = (\cos y)^x$	[5]	

parents was wizards and he start his education in magic at Hogwart's School of Witchcraft and Wizardry. g)There he makes two close friends, Ron and Hermione, who shares his adventures. h)Each film ends dramatically, often with a battle between Harry and his worst enemy, the evil wizard Lord Voldemort. i)The films are mainly set in Hogwart's School of Witchcraft and Wizardry, which is in an ancient castle. j)There are moving staircases, portraits which can talk and move, and a dark forest where strange and dangerous creatures lives. k)As well as Harry, Ron and Hermione, there are a huge variety of characters, including students, professors, dark wizards, ghosts and fantasy creatures. Non-magic people are called Muggles. l)The cast is excellent. m)The acting's outstanding, and even the strangest of characters are totally believable. n)Still Parents need to know that Harry Potter and the Sorcerer's Stone, the first movie in the massively popular and successful Harry Potter series, have some intense and scary moments. o)Harry Potter and friends who are only 11 years old here are in peril and get hurt, but not seriously, and most of the scares comes from fantasy creatures.

<b>4. Complete the following sentences using zero, 1<sup>st</sup>, 2<sup>nd</sup> &amp; 3<sup>rd</sup> conditional structures.</b>	<b>0.5x5=2.5 Marks</b>	<b>CO1</b>
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- a) If you .....(take) a map, as I told you, we wouldn't be lost now.
- b) If you.....(touch) a fire, you get burned.
- c) If I .....(be) born in a different country, I would have learned to speak a different language.
- d) If he comes, I .....(be) surprised.
- e) If we had arrived earlier, we .....(see) John.

<b>5. Identify the correct part of speech of the following underlined words.</b>	<b>0.5x5=2.5 Marks</b>	<b>CO1</b>
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- a) My family live in different parts of India.
- b) I often feel we've forgotten to communicate with our surroundings.
- c) However, there are a number of places and events that really must be seen and enjoyed if you are in London.
- d) They were able to choose from a limited number of programs on three channels.
- e) I think we need to rethink how addicted we are becoming to being available for everyone and everything at all times.

<b>6. Listening test will be conducted separately.</b>	<b>10 Marks</b>	<b>CO2</b>
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<b>7. Speaking test will be conducted separately.</b>	<b>10 Marks</b>	<b>CO3</b>
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**Daffodil International University**  
 Department of Computer Science and Engineering  
 Faculty of Science & Information Technology  
 Final Examination, Spring 2023

**Course Code: PHY101**

**Level: 1 Term: 1**

**Time: 2.0 Hours (120 Min.)**

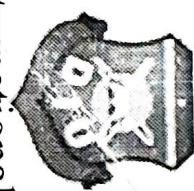
**Course Title: Physics-I**

**Batch: 64**

**Marks: 40**

**Answer ALL Questions**

1.	<ul style="list-style-type: none"> <li>(a) What is the range of visible light?</li> <li>(b) What do you mean by coherent sources of light?</li> <li>(c) What is destructive interference of light?</li> <li>(d) What is diffraction of light?</li> <li>(e) What do you mean by polarized and unpolarized light?</li> <li>(f) What is specific rotation?</li> <li>(g) Write the mathematical relation of Celsius, Fahrenheit, and Kelvin temperature scale.</li> <li>(h) State 1<sup>st</sup> law of thermodynamics.</li> <li>(i) Define entropy.</li> <li>(j) What is efficiency of an engine?</li> </ul>	<span style="border: 1px solid black; padding: 2px;"><b>[Marks] [1×10 = 10]</b></span>	<b>CO-1 K-1</b>
2.	<ul style="list-style-type: none"> <li>(a) Explain that Snell's law can be obtained from Fermat's principle.</li> <li>(b) Show that in a reversible process the entropy remains constant.</li> <li>(c) Show that the ratio of specific heat (<math>C_p/C_v</math>) is 1.4 for diatomic molecules.</li> <li>(d) Establish the conditions of path difference for obtaining interference of two light waves.  Or,  (d) Establish the theory for finding the radius of curvature of lens using Newton's Ring experiment.</li> </ul>	<span style="border: 1px solid black; padding: 2px;"><b>[Marks] [4+4+3+4 = 15]</b></span>	<b>CO-2 K-2</b>
3.	<ul style="list-style-type: none"> <li>(a) The refractive index of core glass is 1.53 and cladding glass is 1.48 of a fiber optic cable. Determine the minimum angle of incident light for total internal reflection.</li> <li>(b) The light is incident from a single slit to a double slit. It is found that the 12<sup>th</sup> bright fringe is situated at a distance of 0.6 cm from the central fringe. Distance of the screen from the slit is 180 cm. If the wavelength of the light is 6200 Å, Determine the slit separation.</li> <li>(c) Determine the temperature whose value is the same in Fahrenheit and Kelvin scale.</li> <li>(d) A Carnot's engine whose temperature of the source is 400 K takes 200 calories of heat at this temperature and rejects 150 calories of heat to the sink. Determine the temperature of the sink? Also determine the efficiency of the engine.</li> <li>(e) Let a gas is enclosed in a cylinder with a piston. By keeping the pressure fixed at 300 Pa, if 600 J heat is supplied to the system it does 1000 J work. Determine the system's internal energy change and give an explanation.</li> </ul>	<span style="border: 1px solid black; padding: 2px;"><b>[Marks] [3×5 = 15]</b></span>	<b>CO-3 K-3</b>



Daffodil International University

Department of Computer Science and Engineering  
Faculty of Science & Information Technology

Quiz Test 2, Spring 2023

Course Code: CSE 115, Course Title: Introduction to Biology & Chemistry for Computation  
Marks: 15

Time: 30 Minutes

1.	Define Oligonucleotide. Demonstrate 1st generation DNA Sequencing Method with appropriate figure.	[8]	
2.	Illustrate building blocks of Nucleic Acids.	[7]	
	Explain DNA Structure shortly with appropriate figure.		

*[The figures in the right margin indicate the just marks will be awarded sequentially.]*

1. a)

[3] CO1