Bismillahir Rahmanir Rahim

International Islamic University Chittagong

Department of Computer Science and Engineering

B.Sc. in CSE

Mid-Term Examination, Spring-2025

Course Code: **PHY-1101** Course Title: **Physics-I**

Time: 1 hour 30 minutes Full Marks:30

(i) Answer **all** the questions. The figures in the right-hand margin indicate full marks.

(ii) Course Learning Outcomes and Bloom's Levels are mentioned in additional columns.

1.	a)	What do you understand by the term *center of mass* of a system.	*CLO1*	*U*	*02*
	b)	Derive the expression for the rotational kinetic energy of a rigid body.	*CLO2*	*Ap*	*05*
	c)	A flywheel of mass 100 kg and radius 0.5 m makes 10 revolutions per second. Calculate (i) angular velocity, (ii) moment of inertia, and (iii) the kinetic energy of the flywheel. Assume that the whole mass of the flywheel is concentrated at the rim.	*CLO3*	*An*	*03*
2.	a)	Derive an expression for the gravitational potential due to a spherical shell at a point outside the shell.	*CLO2*	*Ap*	*07*
	b)	If a body is projected in such a way that it escapes the earth's gravitational field. Then find the required velocity of that body.	CLO3	An	03
		Or			
		What is the gravitational potential with respect to the sun at the position of the earth? The mass of the sun is 1.99×10^{30} kilograms and the mass of the earth is 5.98×10^{24} kilograms. The mean earth-sun distance is 150×10^{6} kilometers.			
3.	a)	Explain the Heisenberg's uncertainty principle in your own words.	CLO1	U	02
	b)	Derive an expression for the time-independent Schrödinger wave equation.	CLO2	Ap	05
		Or			
		State and prove the parallel axis theorem for the moment of inertia.			
	c)	Calculate the uncertainty in the position of an electron weighing 9×10^{-28} gm and moving with an uncertainty in speed of 3×10^{9} cm/sec.	CLO3	An	03

kg m^{-3}

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INTERNATIONAL ISLAMIC UNIVERSITY CHITTAGONG

Department of Computer Science & Engineering (CSE)

BSc in CSE, Mid-Term Examination, Spring 2025

Course Code: **CSE-1121** Course Title: **Computer Programming I**

Full Marks: 30 Time: **1 Hour 30 minutes**

[Answer all the following questions from Group A and B. Some questions may have an option. (Figures at right margin illustrate the marks (M), course objectives (COs), and bloom's taxonomy (DL))]

No.	Questions	M	COs	DL
1. a)	Define algorithm. Why is it needed for computer programming? Write the algorithm, flowchart, and C programming code to find the biggest number from the given three input positive integers A, B, and C.	5 (1+1+3)	CO1	U
b)	Describe the basic structure of a C program with an appropriate diagram and write the basic purposes of the **main()** function in that structure. Mention the name of C tokens and identify the C tokens of the following sample C programming code segments in an appropriate table. [Avoid the redundant entries of tokens]	5 (2+3)	CO1	U

```
int c, n, fact = 1;
printf("Enter a integer number\n");
scanf("%d", &n);
for (c = 1; c <= n; c++)
    fact = fact * c;
printf("Factorial of %d = %d\n", n, fact);
```

Or	Mention the rules of identifier in C programming. Elucidate the different types of basic datatypes, variables, and constants used in C programming with examples. Define a symbolic constant in a C program with an appropriate example. Where must a symbolic constant be placed within a C program?	5 (1+3+1)	CO1	R
2. a)	a1) Identify the following operator's names according to their precedence: i) *, % ii) <, >= iii) ||, && iv) +,-,/ v) ++,-- vi) **sizeof()** vii) +=,= viii) <<,>>	5 (2+3)	CO1	An

a2) A C program contains the following declarations and initial assignments: [Replace I with the second last digit of your ID, and D with the last digit of your ID. For example, if you ID be C211278, then I=7, D=8]

```
int    i = I, j = D, k, m=25;
double x = 8.25, y = -4.2;
```

Determine the value of k or error [if any, mention the error] in each of the following assignment expressions. Use the values initially assigned to the variables for each expression.

```
i)   k = floor(x+y+1)
ii)  k = i%x+1
iii) k=!(i>j) && (x==y)
iv)  k = sqrt(m)+pow(j,2)
v)   k = sizeof(x)/0
vi)  k = (j > i) ? j++ : i--
```

b)	i) Write purposes of **getchar()** and **scanf()** functions to get a character input with example. Write the output of the following C program code segment based on your student ID's last digit. [if student ID is C251004, then id =4]	5 (2+3)	CO2	Ap

```
switch(id){
    case 1:
        Printf("One\n"); break;
    case 2:
        Printf("Two\n"); break;
    case 3:
        Printf("Three\n");
    default:
        Printf("Defaults\n"); break;

}
```

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ii) Write a C program using the **switch** and **if-else** statement to display the letter grade for given marks from 0 to 100. Consider the following grading system in the first table [The sample input/output is given in the second table for your reference]:

Marks	Grade
80 - 100	A
70 - <80	B
60 - <70	C
50 - <60	D
0 - <50	F

Sample input:	Sample output:
99	Grade: A
41	Fail
67	Grade: C
79.50	Grade: B

CO2 Ap

Or ii) Armstrong Number is a positive integer equal to the sum of the cubes of each digit of that number. Write a C program to check whether a number is "Armstrong" or not. For example, an Armstrong **371 = $3^3+7^3+1^3$ = 371**. [The sample input/output is given for your reference]

Sample input:	Sample output:
371	371 is **Armstrong Number**
121	121 is not **Armstrong Number**
153	153 is **Armstrong Number**

3. a) i) Contrast **while** loop with **do-while** loop statements with example. **5** CO2 Ap (1+3+1)

ii) Write a C program to print the first N terms of a numerical series, where each term of that series is the summation of the previous two terms, and the values of the first two are **f1=1** and **f2=1**. For example, the third term of this numerical series is **f3=f1+f2 =2.** [The sample input/output is given for your reference]

Sample input:	Sample output:
1	series: 1
5	series: 1, 1, 2, 3, 5
7	series: 1, 1, 2, 3, 5, 8, 13

iii) Write the output of the following c program:

```
#include<stdio.h>
int main(){
    int i = 0, x = 0;
    do{
        if(i%2 == 0){
            x++;
        }
        ++i;
    }while (i < 10);
    printf("\nx = %d", x);}
```

b) i) Write a C program to find the factorial of given an integer number N by using **for** loop statements and rewrite that C program using **while** statements. **5** CO2 Ap (3+2)

Sample Input: Enter the value of N: 5

Sample Output: Factorial of 5 is 120.

ii) Write a C program to display the number pyramid of N for given input N lines. [The sample outputs are shown below for the given input N=3 and N=4]

N=3, 3 3 3 3 3 3	N=4, 4 4 4 4 4 4 4 4 4 4

Or ii) Write a C program to find all integer numbers from 1 to N that produce remainder R in a modulation, where integer N is also considered dividend, and remainder R is the last digit of your ID's integer part. [if student ID is **C251004**, then **R=4**].

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International Islamic University Chittagong

Centre for General Education

Midterm- Examination, Spring -2025

Course Code: GEEM-1101

Course Title: Text of Ethics and Morality

Marks: 30 **Duration: 1.50 hours**

Answer any three of the following questions accordingly

SL	Questions	Marks	CLOs	*Blooms taxonomy domain*
01	e) What's Transgender? What's the difference between transgender & hermaphrodite? f) What's the reason of changing in God's creation. Mention the gender criteria in Islam.	5 X 2 =10	CLO-1	*Create*
	Or e) Elucidate the characteristics of Mottaqi which are mentioned in the *Surahtul Baqarah* to be guided from the holy Quran. f) Introduce Arabic Language in details and mention how many alphabets are there in Arabic Language.	5 X 2 =10	CLO-1	Analyze
02	Answer the following questions: a) Translate the Sura Fatiha in English. b) Write the different name of surah Fatiha. c) What's the basic difference between Jihad and Terrorism? d) What is rule of holy Quran regarding transgender? Discuss	4X2.5=10	CLO-1	Remember & Understand
03	e) Explain the bad impact of bad behaviors in the society mentioned in sura Hujarh. f) What's the definition of Terrorism. Explain in the perspective of Islam.	5 X 2 =10	CLO-2	Create

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International Islamic University Chittagong
Center for General Education (CGED)
Midterm Examination
Spring Semester, 2025

Course Title: Advanced English **Course Code: GEEL-1106**
Marks: 25+5=30 **Time 1 hour and 30 minutes**

Reading-15

Read the following passage and answer the questions that follow:

In 1912 an American shipping company launched a new ship called the 'Titanic'. It was the largest and most luxurious ocean liner of that time. It weighed 46,000 tons and. could carry about 2,200 passengers. Experts said that nothing could sink it. It was definitely unsinkable. On April 14 1912, the ship sailed on its first voyage across the Atlantic from Southampton in England to New York in the United States, with 2,224 passengers, men, women and children. On April 15, just before midnight, the ship struck an iceberg. The iceberg tore a great hole in the ship's side, and the unsinkable 'Titanic' began to sink. There was great, alarm on board. Warning bells rang out. Every one rushed to the lifeboats, but there was not enough room for them all. There was room for only 1178 passengers. The lifeboats took mostly the women and children. It was a terrible scene. Wives were weeping because they had to leave their husbands to drown. Children were crying because they had to say goodbye to their fathers. The men had to remain on the ship. The 'Titanic' sent out signals for help, but no help came. Another ship, the 'Californian', was only twenty miles away, but her radio operator was asleep and did not hear the distress signals. In the early hours of the morning the 'Titanic' sank, while her band was playing bravely on deck. Twenty minutes later another liner, the 'Carpathia', arrived on the scene and helped to rescue survivors from the icy water. But of the 2,224 passengers, only about 700 survived. It was a terrible disaster. But something good came out of the sinking of the 'Titanic'. In 1913 there was a committee of inquiry into the disaster. This committee drew up many new rules for shipping companies; Since then, every ship has had to provide lifeboat places for each passenger and has had to organize life boat drill during each voyage. Every ship has had to carry enough radio operators so that there is always one of them on duty. Another important result of the sinking of the 'Titanic' was the formation of an international ice patrol. This patrol warns ships about ice and icebergs in the North Atlantic.

1. **Answer the questions.** **1×2=2**
   a. Why were so many lives lost in the 'Titanic' disaster?
   b. Did anything good come from the sinking of the Titanic?

2. **Answer the questions as directed** **1×2=2**
   a. Make a sentence with 'terrible disaster' (Don't quote from the passage.)
   b. 'To go ahead quickly' (Find a synonym from the passage.)
3. **Find suitable words in the passage to complete these sentences** **1×3=3**
   a. Radio operator must not sleep when they are_____duty.
   b. When warning bells rang out, everyone_____to the lifeboats.
   c. Suffix and prefix are needed for the_____of new words.

Read the following passage and answer the questions that follow:

Climate justice is more than just reducing carbon emissions or promoting clean energy. It is about recognizing how climate change affects different communities in unequal ways. It demands fair solutions that consider the needs of those who suffer the most. Among them, women — especially in low-income and marginalized communities — are facing the harshest consequences. Yet their role in climate action remains overlooked. To build a truly just and sustainable future, we must understand why climate justice and gender equality must go hand in hand.

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In many parts of the world, women and girls are already burdened by social and economic
Climate change makes this burden heavier. According to UNICEF, in many low-income countrie
and girls spend up to six hours a day collecting water. As water sources dry up due to droughts an
temperatures, this daily task becomes even more difficult. In some regions, women must walk l
distances, often through unsafe areas.

The United Nations High Commissioner for Refugees reports that in some communities, climate-related challenges have led to a rise in gender-based violence by up to 30 per cent. When communities face food shortages, crop failures and forced migration, tensions rise. In many cases, this leads to a rise in domestic violence and abuse against women. These issues show clearly that climate change is not only an environmental crisis — it is also deepening social injustice and widening gender gaps.

Women's vulnerability in the face of climate change is no coincidence. It is the result of structural inequalities that exist in most societies. In rural areas of Bangladesh, across sub-Saharan Africa, and in small island nations, women are primarily responsible for gathering food, fuel and water for their families. When disasters like floods, cyclones, or droughts strike, women are the first to feel the impact. They must work harder to provide basic needs, even as resources become scarcer.

At the same time, women often have fewer rights and less access to land, education, income and decision-making power. This limits their ability to adapt to changing climate conditions. For instance, the Food and Agriculture Organization estimates that women make up nearly half of the agricultural workforce globally. Yet they own only about 15 per cent of agricultural land. Without land ownership, women are excluded from many forms of government support, such as loans, insurance, or subsidies. They are unable to invest in climate-resilient farming tools or techniques.

Lack of access to credit and finance also prevents women from starting green businesses or adopting eco-friendly technologies. In many cases, even basic tools like improved seeds, irrigation systems, or drought-resistant crops are out of reach. This puts their livelihoods at further risk and leaves their families more exposed to food insecurity. When harvests fail, women are the ones who must find alternative sources of food, often at great personal cost.

4. Answer the following questions as directed

a. What does 'Climate Justice' mean? **1×8=8**
b. Everyone in a society is_____for climate change now-a-days. (Fill in the gaps by choosing a word from the passage)
c. Make a sentence of your own with the phrase "marginalized communities".
d. Co-occurrence (Choose a word from the passage for the expression).
e. We should find out an_____ source of fuel for our coming generation. (Fill in the gaps by choosing a word from the passage)
f. Do you think climate change widens gender gap? Give one reason behind your answer.
g. Risk (choose a word from the passage for the expression).
h. Why are climate justice and gender equality connected?

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Grammar-5

1×5=5

Answer the following questions as directed

a. He thanked me for what I did. (Correct the sentence)
b. Hurry up. You want to avail yourself of the opportunity. (Combine the sentence with if).
c. He is one of the few people who (be) against the law, (Use right form of verb)
d. Peeling onions always made me crying. (Correct the sentence).
e. Many a student (be) playing in the field now. (Use right form of verb).

Writing-05

6. Write a paragraph on the following topic **05**

July Revolution' 24

Or

Raihan cut a sorry figure in the HSC Test Examination. He could realize that his disobedience and irregularity made him get an unexpected result, so he immediately … (Expand these sentences into a complete story giving a suitable name)

Speaking Test -05

[Exam will be taken by the course teacher in a convenient time.]

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International Islamic University Chittagong (IIUC)
Department of Computer Science and Engineering (CSE)
Mid Term Examination

rogram: B. Sc. in CSE
Course Code: MATH-1107
Time: 1:30 hours

Semester: Spring-2025
Course Title: Mathematics-I
Total Marks: 30

(i) Answer all the questions. The figures in the right-hand margin indicate full marks.
(ii) Please answer the several parts of a question sequentially.
(iii) Course Learning Outcomes (CLOs) and Bloom's Levels are mentioned in additional Columns.

Course Learning Outcomes (CLOs) of the Questions

CLO1:	Compute the functions, limit and continuity of a function, derivatives, integrals and extrema of single-variable and/or multivariable functions.
CLO2:	Understand the techniques of differentiation and integration.

Bloom's Taxonomy Domain Levels of the Questions

Letter Symbols	R	U	Ap	An	E	C
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create

			Marks	CLOs	DLs
1.	a)	Find the Maclaurin Series for the function $f(x) = \cos x$	2	CLO1	U
	b)	Find the domain & range of the function, $f(x) = \sqrt{\frac{1-x}{x}}$	2	CLO1	U
	c)	Test the differentiability of the following function at $x = 2$ $f(x) = 3x + 2; \quad x > 2$ $= 12 - x^2; \quad x \le 2$	6	CLO1	App
		Or Test the differentiability of the following function at $x = 2$, where $f(x) = \begin{cases} x & when\ 0 < x < 1 \\ 2 - x & when\ 1 \le x \le 2 \\ x - \frac{1}{2}x^2 & when\ x > 2 \end{cases}$	6	CLO1	App
2.	a)	Find the differential co-efficient of e^x by the first principle method.	3	CLO2	U
	b)	If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + \text{----------} -\infty}}}$; then Show that $y_1 = \frac{\cos x}{2y - 1}$	3	CLO2	U

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c) Evaluate the limit using L'Hospitals rules for $\lim_{x\to 0}\left(\frac{1}{x}\right)^{\tan x}$ 4

Or

Differentiate $\tan^{-1}\frac{2x}{1-x^2}$ with respect to $\sin^{-1}\frac{2x}{1+x^2}$. 4

3. a) If $y = \tan^{-1} x$ then show that, $(1+x^2)y_{n+1} + 2nxy_n + n^2y_{n-1} - ny_{n-1} = 0$ 6

b) Verify Rolle's theorem for $f(x) = 2x^3 + x^2 - 4x - 2$ over $[-\sqrt{2}, \sqrt{2}]$ 4

Or

Test whether the mean value theorem is true for $f(x) = 3 + 2x - x^2$ on $(0, 1)$. 4

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CLO3 App CLO2

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. Engineering in CSE

Midterm Examination, Spring 2025

Course Title: **Basic Electrical Engineering**

Course Code: **EEE 1121** Full Marks: 30

Time: 1 hour 30 minutes

(i) Answer all the questions. The figures in the right-hand margin indicate full marks.

(ii) Course Outcomes (COs) and Bloom's Levels are mentioned in additional Columns.

1) a) Differentiate between KVL and KCL with suitable diagrams and find the branch voltages V1 & V2 from Fig:1a — CO1 U 5

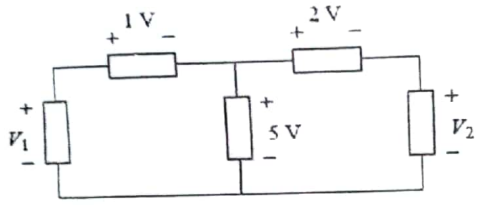


Fig:1a

1) b) Discuss the concept of voltage divider rule and findthe value of v_x and v_o in the circuit of Fig. 1b — CO2 Ap 5

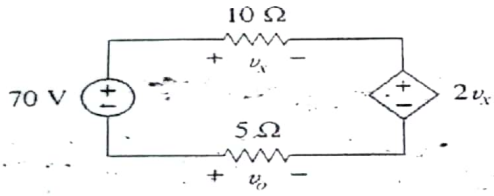
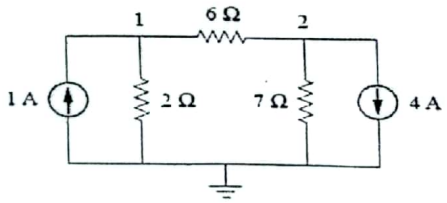


Fig. 1b

2) a) Define node and branches in a circuit and Obtain Node voltages in circuit of Fig: 2a — CO1 U 5



2 2,6 1,3

Fig: 2a

2) b) Using mesh analysis find the current through each branche of the circuit in Fig-2b — CO2 An 5

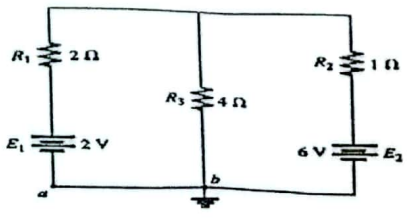


Fig: 2b

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3) a) Apply superposition principle to find V_0 in the circuit of Fig-3a CO2 Ap 5

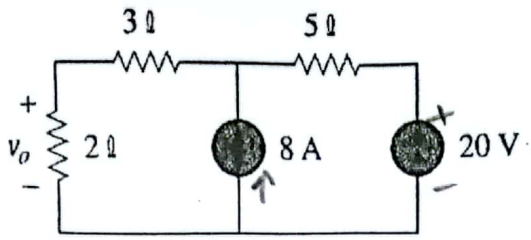

Fig. 3a

3) b) Using Thevenin's theorem, find the Thevenin equivalent circuit to the a-b terminal of Fig-3b CO2 E 5

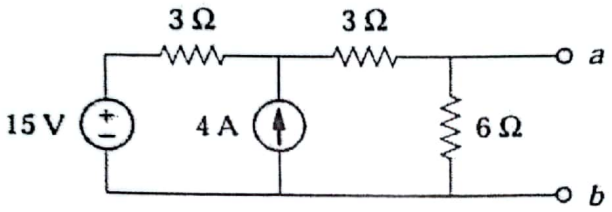

Fig. 3b

OR,

3) a) Use source transformation to find current and power in the 8Ω resistor CO2 Ap 5

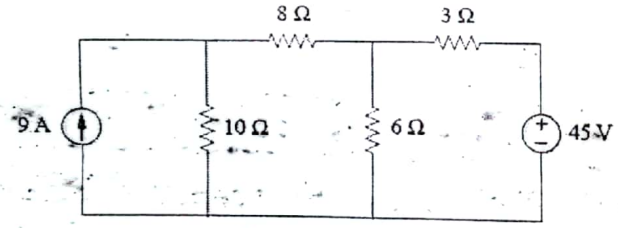

Fig-3c

3) b) Find the value of R_L for maximum power transfer in the circuit of Fig. 3d and Find the maximum power. CO2 E 5

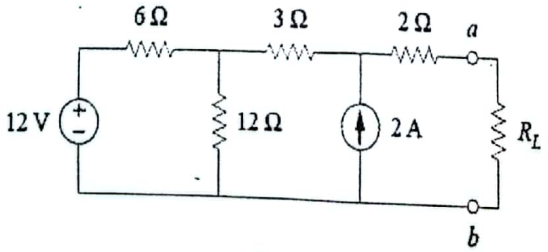

Fig-3d

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