

International Islamic University Chittagong
Department of Computer Science and Engineering
B. Sc. in CSE Final Examination, Spring 2023

Course Code: CSE 1121 Course Title: Computer Programming 1

Total marks: 50

Time: 2 hours 30 minutes

[Answer all the questions; in some questions, there are options; you will solve any one of them; Figures in the right-hand margin indicate full marks. Separate answer script must be used for Group-A and Group-B]

Group-A

1. a) Write the output of the following C code.

2

```
#include <stdio.h>
int main()
{
    int rows = 5;
    for (int i = 1; i <= rows; i++)
    {
        for (int j = 1; j <= rows; j++)
            if (j <= i)
                printf("C");
        printf("\n");
    }
    return 0;
}
```

- b) Write a C program that reads a positive integer N and prints the following pattern for n rows. 3
For example, if N is 5, then the output would be:

```
*****
*****
****
 ***
 *
*
```

- c) You will be given some positive integer inputs followed by a negative value. You have to print the sum of the given positive inputs except the ones which are divided by 5 or 7. You have to calculate their average also. Write a C program for this by using *break* statement after getting the negative input and *continue* statement if the input is divided by 5 or 7. 5

Sample Input	Sample Output
5 6 2 8 7 8 -1	Sum = 24 Average = 6.0

OR

A prime number (or a prime) is a natural number greater than 1 that is not a product of two smaller natural numbers. In this problem, you will be given T test cases. Each test case consists of one line containing a single nonnegative integer N. For each test case, print Prime number if the number N is a prime number. Otherwise, print Not a prime number.

Sample Input	Sample Output
2 11 12	Prime number Not a prime number

```

2 a) int magic (int n) {
    int m = 0;
    m += n;
    return m; return
}

int main () {
    for (int i = 1; i <= 5; i++) {
        printf("%d ", magic (i));
    }
    return 0;
}

```

4 9
1 2 3 4 5

- Write the output produced by the code snippet above.
 - You're not allowed to make any changes in the `main()` function. Change the program so that it would output the cumulative sum from 1 to 5, i.e. it would output 1 3 6 10 15.
- b) Write a program that will pass an array through the arguments. Your defined function will find the *median* of those numbers. To find the median, the numbers have to be listed in numerically sorted order. Then the middle element is the median. For example, if the list is {4, 1, 1, 10, 3, 5, 7}, then first sorting in ascending order, we find the list as {1, 1, 3, 4, 5, 7, 10}. The median will be the 4-th element which is 4. Note that, if the number of elements in the list is even, then the average of two middle elements will be the median. 5

OR

Write a program that will pass an array through the arguments. Your defined function will *sort* those numbers in function. For example, if the array is {4, 1, 1, 10, 3, 5, 7}, then sorting in ascending order, we find the array as {1, 1, 3, 4, 5, 7, 10}. Then return the array from the function to the main function and print the sorted array at main function.

```

c) void shout (int n) {
    if (n <= 0) return;      54
    printf("%d ", n);
    shout (n / 2);
    printf("%d ", n);
}

int main () {
    int n = 5X; 54
    shout (n);
    return 0;
}

```

Write the output of the code snippet above where X is the last digit of your ID. For example, if your ID is C231227, then $n = 5X = 57$.

Group-B

- 3 a) Define a one dimensional, 12 element integer array called `Arr`. Assign the values 1, 4, 7, 10 2 to the first four-array elements and assign 0 for rest elements.
- b) Write the output of the following C codes: 3

```

#include <stdio.h>
int main()
{
    int i;
    int arr[5] = {1};
    for (i = 0; i < 5; i++)
        printf("%d ", arr[i]);
    return 0;
}
ii)
#include<stdio.h>
int main()
{
    int arr[5], i=0;
    while(i<5)
        arr[i]=++i;
    for(i=0; i<5; i++)
        printf("%d, ", arr[i]);
    return 0;
}

```

- c) Consider an array DATA with some integers. If the first element of DATA is odd, the last element of it should also be odd. On the other hand, if the first element of it is even, the last element should also be even. If the second element of DATA is odd, the second last element of it should also be odd. On the other hand, if the second element of it is even, the second last element should also be even. And so on. Such an array DATA is called *qalindrome*. For example, {2}, {3}, {1, 2, 3, 8, 5}, {1, 2, 4, 3} are qalindromes whereas {1, 1, 2}, {1, 6} are not. Given an integer N, and N number of more integers, write a C program to determine whether the array is qalindrome or not.

Sample Input	Sample Output
5 1 2 3 8 5	YES
3 1 1 2	NO

OR

Given a number **N** and an array **A** of **N** numbers. Determine if it's *palindrome* or not. An array is called palindrome if it reads the same backward and forward, for example, arrays { 1 } and { 1,2,3,2,1 } are palindromes, while arrays { 1,12 } and { 4,7,5,4 } are not.

- 4 a) You're given an array **A** of size **N × M**, and an integer **S**. You have to find out how many columns's summation of **A** equal to **S**.

Sample Input	Sample Output
3 4 10 1 1 6 1 4 1 2 1 5 1 2 1	2

In this example, the size of array **A** is 3×4 , **S** = 10. Only the first ($1 + 4 + 5$) and the third column ($6 + 2 + 2$) sum equal to **S** (10). So, the answer is 2.

- b) Write output of the following C program.

```

#include<stdio.h>
#include<string.h>
int main()
{
    char s1[]="IIUC", s2[]{"CSE",s3[10];
    printf("%s\n",strcat(s2,s1));
    printf("%d\n",strlen(s2));
    printf("%s\n",strlwr(s2));
    printf("%s\n",strcpy(s3,s2));
    return 0;
}

```

4

2

- c) You're given a string **str1**. Write a C program that will create another string **str2** by changing the contents of **str1**, and storing it into **str2** using the following rules:
- Rule-1:** If any character of **str1** is a letter, it should be converted to the 3 letters ahead. For example, 'p' should be converted to 's', 'y' should be converted to 'b'. Casing should be preserved (uppercase letters should remain upper, and lowercase letters should remain lower).
- Rule-2:** If any character of **str1** is a numeric digit, it should be converted to the 2 steps behind. For example, '4' should be converted to '2', '1' should be converted to '8'.
- Rule-3:** Rest type of the characters should be deleted.

Sample Input	Sample Output
yZp9%2#	bCs70

OR

Rudaba has just learnt vowels from her mother. Now she is doing practice to get them recognized in any place. After few days her mother wanted to check her whether she can identify the vowels or not. Her mother will give a sentence from where she has to count the vowels.

Input

There will be a single line S as input.

Output

Output will be an integer number N as the counting's of vowels.

Sample input	Sample output
This is a test for doing programming.	10
I dream to have a great success.	11

- 5 a) What is a *pointer*? What are the purposes of *address operator* (**&**) and the *indirection operator* (*****)? Explain with example. 2

OR

What do you mean by *bitwise operations*? Briefly describe any two bitwise operators.

- b) Consider the following definition:

```
structBookinfo
{
    //define a field for title
    //declare a field for author's name
    //declare a field for price
};
```

- i. Complete the above structure definition by declaring members/fields for storing book titles (at most 99 character long), authors name (at most 49 character long) and price of book (a real number).

- ii. Using the above structure, write a main program that will receive from user information (title, author name, price) of N books. Then display those information of N books.

- c) Write a C program to read the final marks of N students. Write it to a file called **CSE-1121.txt** 4 and close the file. Again read the same data from **CSE-1121.txt** file, display it on the screen and close the file.

International Islamic University Chittagong
 Department of Computer Science and Engineering
 B. Sc. in CSE

Course Code: EEE-1121
 Time: 2 hours 30 minutes

Final Exam, Spring-2023

Course Title: Basic Electrical Engineering

Full Marks: 50

The figures in the right-hand margin indicate full marks

Part A

[Answer the questions from the followings]

1. a) What is a waveform? Demonstrate some waveforms with proper diagram. C01 Ap 3
1. b) Find the phase angle between $i_1 = -4 \sin(377t + 25^\circ)$ and $i_2 = 5 \cos(377t - 40^\circ)$, does i_1 lead or lag i_2 ? C03 E 3
1. c) Find the rms value of the signal shown in below Fig. 1(c) C03 An 4

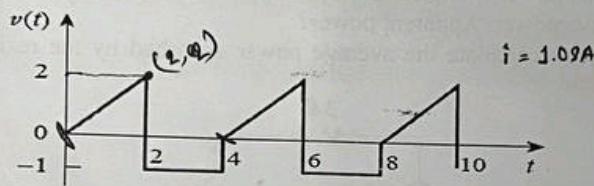


Fig. 1(c)

2. a) Refer to Fig. 2(a) below, determine $v(t)$ and $i(t)$. C04 An 5

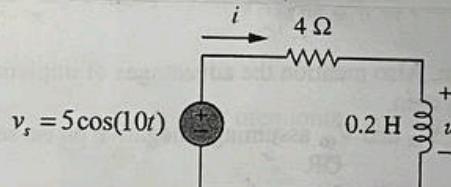


Fig. 2(a)
OR

Solve for I in the following circuit of Fig. 2(a-or)

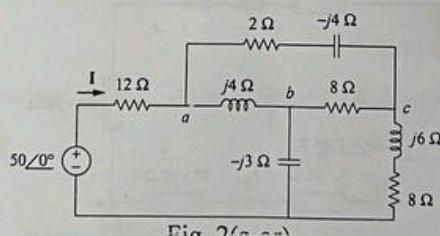


Fig. 2(a-or)

2. b) The voltage across 1 μF capacitor is $v = 30 \sin 400t$. What is the sinusoidal expression for the current. Sketch the v and i curves. C03 An 5

OR

What is the voltage and current relation in a capacitive circuit? Explain your answer mathematically.

2.5/6
0.00006

Part B

[Answer the questions from the followings]

3. a) Design a High pass filter with proper circuit diagram and explain its output characteristics $f_c = \frac{1}{RC}$ C 5
3. b) Given that $R=20\text{k}\Omega$, $C=120\text{pF}$ sketch the phase plot for both high-pass and low-pass filter and determine the magnitude and phase of $A_v=(V_o/V_i)$ at $f=0.5 f_c$ for high pass filter C04 An 5
4. a) What is the significance of power factor in electrical systems and why is it important to maintain a high power factor? C01 E 3

OR

Calculate the instantaneous power and average power absorbed by a passive linear network if: $v(t)=80 \cos(10t+20^\circ)$ and $i(t)=15 \sin(10t+60^\circ)$.

4. b) Explain what does the power triangle represent and how is it related to the concepts of real power, reactive power, Apparent power? C03 U 3
4. c) In the following circuit calculate the average power absorbed by the resistor and inductor. C03 An 4

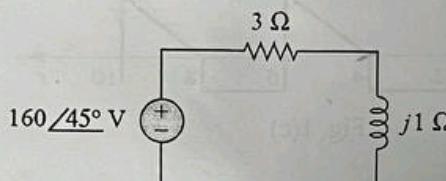


Fig. 4(c)

5. a) Write about three phase system. Also mention the advantages of implementing three phase electrical power system. C01 Ap 3
5. b) Given that $V_{bn}=220\angle 40^\circ$ Find V_{an} and V_{cn} assuming a negative phase sequence C03 Ap 3
- OR
- Illustrate four different configurations of three phase balanced system.

5. c) Calculate the line and phase currents from the given system below: C03 An 4

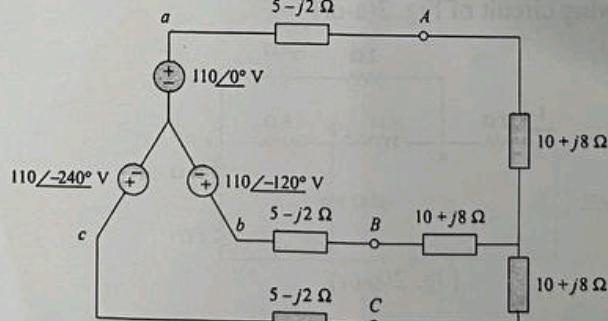


Fig. 5 (c)

OR

A balanced abc-sequence Y-connected source with $V_{an}=100\angle 10^\circ$ is connected to a Δ-connected load $(8+j4)\Omega$ per phase. Calculate the phase Currents.

International Islamic University Chittagong

Centre for General Education (CGED)

Semester End Examination, Spring- 2023

Course Title: Advanced English **Course Code:** UREL-1106

Time: 2 hours 30 minutes **Marks:** 50

1. Read the passage carefully and answer the questions given below.

Long ago goods were manufactured by craftsmen, who were skilled workmen. A craftsman was proud of each article he made. He spent a long time in making it and took great care over its manufacture, and people paid a high price for it when it was finished. All the luxurious Persian Carpets, the beautiful Chinese pottery and the hand-made lace of certain European countries were made in this way. But these articles were bought by only the rich. Poorer people had to be satisfied with goods that were roughly and cheaply made.

When the population of Europe increased, there was a demand for goods of better quality. These goods had to be produced in factories and workshops where hundreds of workers were employed. The invention of the steam engine helped manufacturers by giving them cheaper power to work their machines. Machines took the place of men. Production was increased. People were able to buy articles of good quality at low prices. The age of mass production had arrived. A mass is a large number or quantity. Mass production means the manufacture of a large number of identical articles by the use of machinery. Cars, radios and cameras are examples of many types of articles that are mass produced today.

A conveyor belt plays a large part in mass production. By means of the conveyor belt, which moves continuously, articles are conveyed from point to point during the various stages in their manufacture. A lot of time is saved in this way.

A visit to a factory is an interesting experience. Take for example, a biscuit factory. The whole process of biscuit making is done by machinery. First of all the ingredients such as flour, sugar, fat and water are put into a mixing machine. The mixture comes out of the mixing machine in the form of dough and is pressed on to a machine that presses the dough in moulds. In these moulds the dough is given the shape of biscuits. The biscuits are taken on a conveyor belt to the oven. As they move through the oven, they are slowly cooked. When they are cool, they are taken off the moving belt by workers and packed into boxes. The boxes are weighed, made air tight and wrapped. Then they are ready to leave the factory.

A. Find words in the passage to complete the following sentences.

$0.5 \times 5 = 2.5$

- They have employed some _____ officers for their company.
- Children are very much fond of sweet _____.
- The _____ of many scientific devices has made our life easier.
- This mega shop sells a lot of quality _____.
- Rice, sugar and milk are necessary _____ to cook Firni.

B. Find synonyms from the passage for the following expressions.

$0.5 \times 5 = 2.5$

- Large number and quantity of something
- Exactly the same in design
- A mixer of flour, water etc
- Producers of consumer goods
- Fascinating

C. Answer the following questions in one complete sentence.

$1 \times 3 = 3$

- Why could the poor people not buy luxurious hand made goods?
- Why did the goods become cheaper after invention of steam engine?

iii. What is the cause of making the biscuit packets air-tight?

$1 \times 5 = 5$

D. Answer as directed.

- i. Make your own sentence with the phrase *plays a large part in*.
- ii. Poorer people *had to be satisfied* with cheap goods- Rewrite the sentence replacing the words in italics.
- iii. Write a sentence with the verb form of **population**.
- iv. What is the meaning of Mass production?
- v. The boxes are weighed and made air tight. Change the voice of the sentence.

2. Read the passage carefully and answer the questions given below.

A craftwork is an applied form of art, a social product reflecting the inclusive nature of folk imagination. A craftwork, which usually doesn't bear the signature of its maker, retains a personal touch. When we look a thirty year old nakshikantha, we wonder at its motifs and designs that point to the artistic ingenuity and the presence of the maker in it. The fact that we don't know her name or any other details about her doesn't take anything away from our appreciation of the artist. Indeed the intimate nature of the kantha and the tactile feeling it generates animate the work and make it very inviting.

A craftwork is shaped by the interaction of individual creativity and community aesthetics, utility functions and human values. It is distinguished by its maker's desire to locate himself or herself in the wider and ever changing cultural aspirations of the community, and subsequently of the market. But even when the market is an important factor, community aesthetics remains the factor determining the form and content of the craftwork. The exquisite terracotta dolls from Dinajpur dating back to early 1940s, that form a part of the Bangladeshi Museum's collection, were mostly bought from village fairs by some patron. They were no doubt meant by consumer items, but the dolls reflect community aesthetics in such a manner that the market has not been able to impose its own preferences on them.

A craftwork is always a dynamic object evolving and always abreast of changing tests and preferences. It also represents a way of life and a cultural flavor. Therefore changes in lifestyles and material conditions are expected to have their impact on craftworks and their production. But there is a clash between expectations of pure handmade craftworks and the market need of mechanically produced craftworks. There is no easy solution to the problems that craftworks face in our time. Crafts that are disappearing can and should be revived, even where the machine has made the prospect difficult. Crafts that are still practiced can be safeguarded and made to consolidate their position further.

Answer the following questions according to the given instruction.

$1 \times 12 = 12$

- a) A craftwork is shaped through communal creativity. Is it right or wrong?
- b) To bring anything into existence- find out the synonym from the passage.
- c) Mention the meaning of **safeguard**.
- d) **Fine arts**-find out the synonym from the passage.
- e) **Cultural flavor**- explain the phrase.
- f) Covid-19 is a _____ problem nowadays. Fill in the gap with a word from the passage.
- g) What is the main idea mentioned in the passage. Mention in a sentence.
- h) As a part of speech the word *significance* is a _____.
- i) Is the word **determining** in 12th line of the passage gerund or participle?
- j) They can't do their works according to their _____. Fill in the gap with a word from the passage.

- (Handwritten marks: a checkmark and a circled '0')*
- k) The chairman of this company is very _____ in his works. Fill in the gap with a word from the passage.
l) Give your own suggestion in a complete sentence to promote craftworks.

3. Answer the following questions as directed: $1 \times 10 = 10$

- a) A bouquet of flowers (was/were) given to the guest at the airport. (Use a suitable verb to show subject and verb agreement.)
b) Had you renewed your visa in time, you _____ (not/fall) in such problem. (Complete it as a conditional sentence)
c) I am feeling sick. I ate too much. _____. (Complete the sentence with should/shouldn't + perfective.)
d) Mehnaj is a scholar, an athlete, an artistic. (Correct the sentence)
e) Had I the ability to help the poor, I _____. (Complete the conditional sentence)
f) We have got plenty of time. We (needn't/mustn't) hurry. (Choose suitable modal verb to express correct meaning)
g) If they don't comply the order, what steps the authority (take)? Use right form of verb.
h) Half of the book have been memorized by my younger brother. Right or wrong? If wrong, give the right answer.
i) Neither you nor your brothers (to be) suitable for this job. (Use right form of verb.)
j) He not only spoke loudly but also clear. (Correct the sentence if necessary)

4. a) Write a letter to the Pro Vice Chancellor of your university requesting him to install air-conditioner and sound system in your class room. 05

b) As a special reporter of the Daily Independent write a report on the after-effects of super cyclone Mocha that hit the coastal area. 05

Or

Instead of increasing tax, the government should ban smoking completely in order to ensure public health. Do you agree to this statement or not? Explain your position. *2.50*

5. Speaking/Listening- 05

International Islamic University Chittagong
 Centre for General Education
 Semester End Examination, Spring- 2023

Course Code: **UREM-1101**
 Course Title: **Text of Ethics and Morality**

Marks: 50

Duration: 2.50 hours

Answer the following questions

SL	Questions~	Marks	CLOs	Blooms taxonomy domain
01	Answer the following questions: a) Write the meaning of surah al-Asr. b. Write the meaning of these terms: Al-Haram, al-Nikah, at-talaq, al-Ibadah, al-Riba. c. Write the bad impact of drug and gambling. d. Write the name of days in Arabic. e. Who was Luqman?	10	CLO-2 & CLO-3	Remember & Understand
02	Define Kalima and state its kinds with example. Or Write the role of Talaq in Islam and explain the procedure of Talaq according to Quran and Sunnah.	10	CLO-3	Remember
03	What is deference between interest and trade? Find out some bad impact of interest in human life. Or What does Allah (swt) say regarding veil? Is veil mandatory for every Muslim? Discuss elaborately.		CLO-2	Analyze & Understand
04	Explain necessity of all points of Luqma's sermon for every family.	10	CLO-3	Create
05	Who are successful believers and what is their reward? Point out their characteristics as mentioned in surah al-Muminun.	05	CLO-3	Analyze

International Islamic University Chittagong

Department of Computer Science and Engineering

B.Sc. in CSE

Final Exam, Spring-2023

Course Code: **PHY 1101**

Time: 2 hours 30 minutes

Course Title: **Physics-I**

Full Marks: 50

The figures in the right-hand margin indicate full marks

Part A

[Answer the questions from the followings]

1. a) Distinguish between the longitudinal and transverse wave?
1. b) Derive the expression "the apparent frequency of the note when the stationary source moves towards and away from an observer"

Or

1. c) With a neat diagram, build up the equation form of stationary waves.
1. d) A person is standing on a platform. An engine while approaching the platform blows a whistle of pitch 560 hertz. The speed of the engine is 72 Km/hr, velocity of sound 350 m/s². Calculate the apparent pitch of the whistle as heard by the person.

2. a) Show the graphical representations of SHM.
2. b) Show that, the average kinetic energy of a vibrating particle is directly proportional to the square of the amplitude.
2. c) The equation of a particle executing simple harmonic motion is, $y = 10 \sin(\omega t + \delta)$. If time period is 30 sec, find out the angular frequency.

Or

The driver of a car moving towards a factory with a velocity of 30 m/sec sounds the horn with a frequency of 240 Hz. Find the apparent frequency of sound heard by the watchman of the factory.

Part B

[Answer the questions from the followings]

3. a) State second law of thermodynamics?
3. b) Explain the Carnot's cycle in different state.
3. c) Find the efficiency of a Carnot's engine working between 137°C and 37°C.

4. a) What is interference of light. Find the final expression for intensity from the analytical treatment of Interference.

Or

Define diffraction of light? Derive an expression for the intensity pattern due to single slit diffraction.

4. b) Light from a sodium vapour lamp ($\lambda=589$ nm) forms an interference pattern on a screen 0.8 m from a pair of slits. The bright fringes in the pattern are 0.35 cm apart. What is the slit separation?

5. a) Explain Brewster's law. Show from this law that light is incident on a transparent substance at the polarizing angle; the reflected and refracted rays are at right angles.

5. b) An unpolarized light is incident at an angle equal to the polarizing angle on glass surface. For a refractive index 1.54, what is the value of polarizing angle?

Or

Show that how intensity would be maximum or minimum for $\pi/2, 3\lambda/2$ in details.

International Islamic University Chittagong
Morality Development Program (MDP)
Semester End Examination, Spring – 2023
Course Title: Tajweedul Quran: 1
Course Code: MDP-1101, 1st Semester
Full Marks: 50 Time: 2.50 Hours

Answer any five (05) of the following Questions:

$5 \times 10 = 50$

Q1. Write the meaning of following Surahs (any two) :

a) Surah Al-Kafiroon b) Surah Al-Kausar c) Surah Al-Iklas.

Q.2: Write Ayatul Kursi from your memory (in any language)

Q.3: Identify the types of *Madd* in the underlined words of following Ayats and explain their signs.

a. إِذَا جَاءَ نَصْرٌ أَلْهُو أَفْتَحْ

b. مَا أَغْنَيْتُهُمْ لَمْ يَمْكُنْنَ

c. الْحَدَّدُ الْهُرُبُ بِالْعَلَمِينَ

d. إِنَّهُ كَانَ تَوَابًا

e. الَّذِينَ هُمْ بِأَغْرِي

Q.4: Write the importance of *Taharat* mentioning some evidence from the *Quran* and *Sunnah*.

Q.5: Define *Najassah*? What are the types of impurity? Discuss how to get rid of impurity?

Q.6: Narrate the *Faraid* of *Wudu* and *Gushal*.

Q.7: Define *Tayammum*. When is it mandatory? Discuss the formalities of *Tayammum*.