AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

MODEL EXAMINATION PAPER 2023 AND ONWARDS

Computer Science Paper II

Time: 1 hour 50 minutes Marks: 25

INSTRUCTIONS

Please read the following instructions carefully.

1. Check your name and school information. Sign if it is accurate.

I agree that this is my name and school. **Candidate's Signature**

RUBRIC

2. There are SIX questions. Answer ALL questions. Questions 5 & 6 each offer TWO choices. Attempt any ONE choice from each.

3. When answering the questions:

   Read each question carefully.
   Use a black pointer to write your answers. DO NOT write your answers in pencil.
   Use a black pencil for diagrams. DO NOT use coloured pencils.
   DO NOT use staples, paper clips, glue, correcting fluid or ink erasers.
   Complete your answer in the allocated space only. DO NOT write outside the answer box.

4. The marks for the questions are shown in brackets ( ).

5. You may use a simple calculator if you wish.

Q.1. (Total 2 Marks)

Draw the respective flow chart symbol in front of each algorithm step in the given table.

Algorithm Step	Flow Chart Symbol
If K <= 100	
Answer = X + Y / 3	

Q.2. (Total 3 Marks)

i. Describe the purpose of using loop in a program. (1 Mark)

_____

_____

ii. Write the general syntax of **while** loop. (1 Mark)

_____

_____

iii. What would be the output of the given code if the input is the first five integers, i.e., 1, 2, 3? (1 Mark)

```
#include<stdio.h>
#include<conio.h>
void main( )
{
int n = 3;
float a, i, m, x = 0;
clrscr( );

for(i = 1; i <= n; i++)
{
 scanf("%f", &a);
 x = x + a;
}
m = x / n;
printf("\n%f", m);
getch( );
}
```


Output:

_____

_____

Q.3. (Total 3 Marks)

Write a C program that inputs an integer value from the user and outputs the following messages:

- "Input is a negative value." when the input is less than 0
- "Input is a zero value." when the input is 0
- "Input is a positive value." when the input is greater than 0

Q.4. (Total 5 Marks)

i. A house lock safety system is made up of logic gates. Its buzzer generates an alarm (B = 1) when certain conditions are met.

(**Note:** Consider that this house has only one door and one window.)

Input	Description	Binary Value	Conditions
D	Door Lock Status	1	Door is Locked
		0	Door is Unlocked
W	Window Lock Status	1	Window is Locked
		0	Window is Unlocked

The alarm (output) B = 1 is generated under the following conditions.

Door is unlocked **AND** window is unlocked **OR** Door is unlocked **AND** window is locked **OR** Door is locked **AND** window is unlocked

Draw a logic circuit for this house lock safety system. (3 Marks)

Space for Logic Circuit

ii. Complete the truth table below for the house lock safety system given in part a. (2 Marks)

(**Note**: Show your working in the given workspace. Without working, **NO** marks will be awarded.)

D	W	Workspace	B
0	0		
0	1		
1	0		
1	1		

Q.5. (Total 6 Marks)

EITHER

a.

i. Describe the term, ‘computer security’. (1 Mark)

ii. Identify TWO hardwares and TWO softwares that need security in a computer system. (2 Marks)

iii. The computer security is based on three principles, i.e. confidentiality, integrity and availability. Describe each of these principles. (3 Marks)

OR

b.

i. Describe the role of a hacker in TWO points. (2 Marks)

ii. Describe the following types of hackers: (4 Marks)

I. Red Hat Hackers

II. Blue Hat Hackers

Q.6. (Total 6 Marks)

EITHER

a. Write a program using C language that

- shows the following message to the user:
  "Input character 'a' for calculating the area of a triangle or input character 'b' for calculating the area of a parallelogram".
- inputs and stores this character in variable 'x' having character data type.
- inputs the integer values of base and height.
- uses the **switch case statement** to calculate and output the area of a triangle or the area of a parallelogram depending upon the character stored in variable 'x'.
  The following formulae are used to calculate the area of a triangle and a parallelogram:
  Area of a Triangle = 0.5 × height × base
  Area of a Parallelogram = height × base

OR

b. Write a program using C language that

- uses **while loop** for repetition.
- inputs integer values that are greater than zero.
- adds these integer values.
- stops **while loop** when a value which is less than 1 is given as an input.
- calculates the average of all the values greater than zero.
- outputs the average value.

END OF PAPER

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