AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

APRIL/ MAY 2017

Computer Science Paper II

Time: 2 hours 25 minutes Marks: 40

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**

2. RUBRIC. There are EIGHT questions. Answer ALL questions. Questions 7 and 8 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 ( ).

Q.1. (Total 5 Marks)

An algorithm is a step by step solution to a given problem.

Read the given algorithm and draw a flowchart for it in the space provided.

1. Assign the value 0 to the variables SUM and N respectively.
2. Apply an increment on N by 1 and store the new value back in variable N.
3. Add the values of SUM and N. Store the result back in SUM variable.
4. If the value of N is equal to 50 then print the value of SUM otherwise repeat the steps 2, 3 and 4 until the value of N is equal to 50.

(**Note:** Use the same variable names in flowchart that are given in the algorithm.)

Space for flowchart

Q.2. (Total 5 Marks)

a. Write any ONE valid symbol in the given space for each of the stated operators.

i. Logic Operators (1 Mark)

_____

ii. Arithmetic Operators (1 Mark)

_____

iii. Relational Operators (1 Mark)

_____

b. Three GW-BASIC variables are listed below. (2 Marks)

- Z%
- Y#
- X$

Categorise them in the given table.

Variable with String Data Type	Variable with Integer Data Type

Q.3. (Total 5 Marks)

Read the GW-BASIC code given below.

```
10      CLS
20      FOR Count = 0 TO 4
30      PRINT "*"
40      NEXT
50      END
```

a. Which of the following outputs, **A** or **B**, is correct for the given GW-BASIC code? (1 Mark)

```
*
*
*
*
*
```

A

```
*
*
*
*
```

B

Output:_____

b. REWRITE the given GW-BASIC code using WHILE…WEND loop. (4 Marks)

Q.4. (Total 4 Marks)

There are 900 students studying in a school. The school wants to record the names and ages of these students. Write GW-BASIC syntax to declare a

a. one-dimensional array with appropriate subscript to store the name of students. (2 Marks)

b. two-dimensional array with appropriate subscripts to store the age of students. (2 Marks)

Q.5. (Total 3 Marks)

Read the GW-BASIC codes given in the boxes and write the output of each.

```
10    CLS
20    LET H = − 115.46
30    PRINT ABS(H)
40    END
```

Output: _____

```
10    CLS
20    LET G = 25
30    PRINT SQR(G)
40    END
```

Output: _____

```
10    CLS
20    LET N$ = "Kentucky"
30    PRINT  LEFT$(N$,4)
40    END
```

Output: _____

Q.6. (Total 3 Marks)

Complete the truth table for the given Boolean expression.

$\mathbf{X} = \overline{\mathbf{A}} + (\mathbf{B.C})$

A	B	C	$\overline{\mathbf{A}}$	B.C	$\mathbf{X} = \overline{\mathbf{A}} + (\mathbf{B.C})$
0	0	0			
0	0	1			
0	1	0			
0	1	1			
1	0	0			
1	0	1			
1	1	0			
1	1	1			

Q.7. (Total 8 Marks)

EITHER

a.

i. Define the term virus with reference to computers. (1 Mark)

ii. Describe any THREE ways through which viruses can spread in a computer system. (3 Marks)

iii. Write any FOUR appropriate steps that can be taken to protect a computer system against viruses. (4 Marks)

OR

b. Define the term hacking and suggest any SEVEN effective measures to avoid it. (8 Marks)

Q.8. (Total 7 Marks)

EITHER

a. A cricket club trainer wants to calculate the average weight of club members.

Write GW-BASIC code that will

- input the weight of 55 club members.
- calculate the average and maximum weight values.
- display the average and maximum weight values.
(**Note**: Use the For Loop for repeating the code.)

OR

b. The Body Mass Index (BMI) is a simple weight-for-height (kg/m²) index. It is an important screening tool that tells whether you are obese, overweight, underweight or healthy.

Write a GW-BASIC program that will

- input the weight in kg (W) and height in metres (H).
- calculate the BMI using the given formula.
- print appropriate weight category according to the criteria given in the following table.

$$BMI = \frac{W}{H^2}$$

BMI (kg/m^2)	Weight Category
>= 27.5	Obese
>= 23 AND < = 27.4	Overweight
>= 18.5 AND < = 22.9	Healthy
< 18.5	Underweight

END OF PAPER

Please use this page for rough work

Please use this page for rough work