

**AGA KHAN UNIVERSITY EXAMINATION BOARD**

**SECONDARY SCHOOL CERTIFICATE**

**CLASS X EXAMINATION**

**APRIL/ MAY 2019**

**Computer Science Paper II**

**Time: 2 hours 20 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**

**RUBRIC**

2. 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 all FOUR steps of an algorithm and draw a flowchart for it.

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**

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Q.2.

(Total 5 Marks)

a. Write a GW-BASIC program that

- inputs current (I) and voltage (V) value.
- calculates and outputs power (P) value.

(Note: Formula for power is  $P = I \times V$ )

(3 Marks)

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b. Determine whether the following expressions of GW-BASIC will be evaluated as TRUE (1) or FALSE (0).

(2 Marks)

GW-BASIC Expression	True/ False
PRINT (3 * 3 / 3) > 3	
PRINT (20 MOD 7) < 8	
PRINT (5 + 5 - 5 * 5 / 5) = 5	
PRINT (1 AND 0 OR 1 AND 0) = 1	

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Q.3. (Total 5 Marks)

a. Read the given GW-BASIC program. (4 Marks)

```

10  X = 5
20  Y = 7
30  PRINT X
40  PRINT Y
50  FOR Z = 1 TO 3
60  X = X + Y
70  PRINT X
80  Y = X
90  NEXT Z
100 PRINT Y

```

Refer this program to complete the given table with the values of **X**, **Y**, **Z** and their respective **output** values.

Line Number	X	Y	Z	Output
10	5			
20		7		
30				5
40				7
50				
60				
70				
80				
50				
60				
70				
80				
50				
60				
70				
80				
100				48

- b. In Computer Science examination, a student wrote the following working of IF...ELSE statement.

‘An IF...ELSE statement executes IF-block statements when the condition is false and ELSE-block statements when the condition is true.’

However, there are two errors in this statement. Rewrite the correct statement after removing the errors. (1 Mark)

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Q.4.

(Total 4 Marks)

Read the given GW BASIC program to answer the following questions.

```
10  CLS
20  DIM A(15)
30  FOR X = 1 TO 15
40  INPUT A(X)
50  PRINT A(X) * A(X)
60  NEXT X
70  END
```

a. What is the data type of array **A**? (1 Mark)

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b. Infer the purpose of this program. (1 Mark)

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c. The subscript of array **A** is changed to 22. Rewrite line 30 to input 22 values in array **A**. (1 Mark)

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d. Rewrite line 50 of this program so that it subtracts 5 from each element of array **A** and prints the result. (1 Mark)

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Q.5.

(Total 3 Marks)

Write a GW-BASIC program that

- contains user-defined function named **EQU** to solve the equation  $Z = 2X + 3Y - 2$
- inputs two numeric values.
- calls the function **EQU** and outputs value.

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Q.6.

(Total 3 Marks)

Complete the truth table for the given Boolean expression.

$$X = \bar{A} + (B \cdot C)$$

A	B	C	$\bar{A}$	$B \cdot C$	$X = \bar{A} + (B \cdot C)$
0	0	0			
0	0	1			
0	1	0			
0	1	1			
1	0	0			
1	0	1			
1	1	0			
1	1	1			

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(Total 8 Marks)

a. Describe any FOUR positive and any FOUR negative impacts of computer on society.

b. Describe the importance of having licence of a computer software from the users' point of view in FOUR points and the owner's (one who owns and sells software) point of view in FOUR points.

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Q.8.

(Total 7 Marks)

**EITHER**

a. Write a GW-BASIC program to be used in a restaurant that

- inputs total number of items purchased by each customer.
- inputs the price of each item and adds them to get the **total price**.
- calculates 13% as tax amount on the total bill.  
**Formula to Calculate Tax** = Total Price  $\times$  0.13
- adds total price and tax amount to get the amount of **total bill**.
- outputs the amount of **total bill**.
- calculates and outputs the service charges according to the given criteria.

Total Bill	Service Charges
1 to 10000 Rupees	250
More than 10000 Rupees	500

**OR**

b. A cab service (taxi car) needs a program to calculate the bill of customers.

Write a GW-BASIC program for the cab service that

- inputs number of kilometres travelled.
- charges 30 rupees per kilometre for initial 5 kilometres.
- charges 25 rupees for each kilometre after 5 kilometres.
- adds fixed amount of 50 rupees in total charges.
- outputs the bill.

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