

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

ANNUAL EXAMINATIONS (THEORY) 2023

Computer Science Paper I

Time: 1 hour 10 minutes Marks: 40

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 40 only.
4. In each question, there are four choices A, B, C, D. Choose ONE. On the answer grid, black out the circle for your choice with a pencil as shown below.

Correct Way		Incorrect Ways	
1	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D	1	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D
		2	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D
		3	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D
		4	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D

Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the boxes.
7. You may use a simple calculator if you wish.

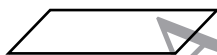
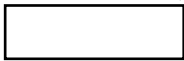
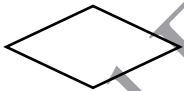

1. Salar is assigned to solve a problem. He has come up with multiple solutions that produces correct results.

The step of problem solving in which Salar's action is performed is identified as

- A. defining the problem.
 - B. analysing the problem.
 - C. finding candid solutions for the problem.
 - D. selecting the best solution for the problem.
2. The three MOST appropriate factors in analysing the efficiency of an algorithm are
- A. control unit, memory and buses.
 - B. control unit, motherboard and buses.
 - C. execution time, memory and storage space.
 - D. execution time, motherboard and storage space.
3. Consider the given statement.

Let the length L be 10.

The flowchart symbol that must have the given statement is

A	
B	
C	
D	

4. Consider the given flowchart symbol.



The given flowchart symbol is used to represent the

- A. decision in a flowchart.
- B. processing in a flowchart.
- C. input and the output in a flowchart.
- D. starting and the ending in a flowchart.

5. Consider the given algorithm.

```
Step 1: Start
Step 2: Let the number A be 10 and B be 5
Step 3: Initialize X = 1 and Y = 0
Step 4: X = X * A - B
Step 5: Y=Y + 2
Step 6: If Y ≤ B Then GOTO Step 4 otherwise
GOTO Step 7
Step 7: Output X
Step 8: Stop
```

The output of this algorithm is

- A. 1
 - B. 5
 - C. 45
 - D. 445
6. Consider the given algorithm.

```
Step 1: Start
Step 2: X = 5
Step 3: Y = 4
Step 4: Z = X % Y
Step 5: A = Z + Y
Step 6: Y = Y - 3
Step 7: IF Y ≥ 1 THEN GOTO Step 4
Step 8: Output A
Step 9: Stop
```

The output of this algorithm is

- A. 1
 - B. 4
 - C. 5
 - D. 9
7. Consider the given statement.

X= -9;

The appropriate declaration of variable X will be

- A. int X = -9
- B. float X = -9
- C. long float X = -9
- D. unsigned int X = -9

8. According to the rules for specifying variable names, the VALID variable name is/ are
- I. `_Var`
 - II. `1Var`
 - III. `Var_1`
- A. I only.
 - B. II only.
 - C. I and III.
 - D. II and III.
9. In C programming, the data type that occupies the LEAST memory space in bytes is
- A. `int`
 - B. `char`
 - C. `float`
 - D. `double`
10. Which of the following statements is FALSE about comments?
- A. It explains the reader what the program is intended to achieve.
 - B. It clarifies the structure of the program.
 - C. It is ignored by the computer.
 - D. It makes the code complex.
11. In structured languages, the fundamental elements are
- I. Selection
 - II. Sequence
 - III. Functions
 - IV. Repetition
- A. II and III.
 - B. I, II and III.
 - C. I, II and IV.
 - D. II, III and IV.
12. The range of double float is $10^{-308} \sim 10^{308}$ with the precision of
- A. 6 digits.
 - B. 7 digits.
 - C. 15 digits.
 - D. 30 digits.

13. Which of the following is/ are the feature(s) of explicit type casting?

- I. It may result in the loss of data.
- II. It is useful for numeric data.
- III. It completely converts different data types.

- A. I only
- B. II only
- C. I and III
- D. II and III

14. The purpose of using & in scanf() is that

- A. it is required for all integer values.
- B. it displays all the input values on the screen.
- C. it performs explicit type casting of different values.
- D. it stores input value at the memory address of the variable.

15. Consider the given statement.

```
int y = 2 + 3 * 6 / 2;
```

To display the value of variable y, the format specifier that should be used in printf() function is

- A. %d
- B. %c
- C. &d
- D. &c

16. Which of the following is used to read a single character from the keyboard which is displayed immediately on screen without waiting for the enter key?

- A. scanf
- B. getch
- C. getche
- D. getchar

17. The examples of unary operators are

- I. !
- II. ++
- III. %
- IV. ||

- A. I and II.
- B. I and III.
- C. II and IV.
- D. III and IV.

18. Consider the given statements.

int P, Q;

Q = 3 + 4 / 2;

The condition $Q < P$ will be TRUE only when the value of P will be

- A. 5
- B. 5.5
- C. 6.5
- D. 10

19. Consider the given statement.

K *= J;

This statement can be rewritten as

- A. K * J = K;
- B. K = J * J;
- C. K * K = J;
- D. K = K * J;

20. Consider the given program.

```
#include <stdio.h>
int main()
{
    int R = 0;
    R++;
    printf("%d", R++);
    return 0;
}
```

The output of the given program is

- A. 0
- B. 1
- C. 2
- D. 3

21. Consider the given statements.

- I. $(x > y)$
- II. $(x < y)$
- III. $(x \neq y)$
- IV. $(x == y)$

If $x = 20$ and $y = 25$, then the statements that will evaluate FALSE are

- A. I and III.
- B. I and IV.
- C. II and III.
- D. II and IV.

22. The advantage(s) of using switch statement over if statement is/ are

- I. Easier to debug
- II. Faster in execution
- III. Works with variable conditions

- A. I only.
- B. III only.
- C. I and II.
- D. II and III.

23. In order to write the condition that evaluates more than two conditions and return TRUE on the right condition, the conditional structure used will be

- A. if structure.
- B. if-else structure.
- C. if-else-if structure.
- D. switch-case structure.

24. Consider the given C statement.

`if ((a % 2 == 0) && (a % 3 == 0))`

This statement will evaluate as TRUE when the value of variable a is

- A. 10
- B. 12
- C. 14
- D. 16

25. How many types of loops are there in a C programming language?

- A. 2
- B. 3
- C. 4
- D. 5

26. Which of the following for loop statements will do 9 repetitions?

- A. for (i = 1; i < 9; --i)
- B. for (i = 1; i < 9; ++i)
- C. for (i = 10; i > 1; --i)
- D. for (i = 10; i > 1; ++i)

27. Consider the given program.

```
#include <stdio.h>
int main() {
int n;
for (n = 10; n > 1 ; n--)
{
printf("%d ", n);
}
return 0;
}
```

The output of this program is

- A. 1 2 3 4 5 6 7 8 9 10
- B. 10 9 8 7 6 5 4 3 2 1
- C. 2 3 4 5 6 7 8 9 10
- D. 10 9 8 7 6 5 4 3 2

28. Consider the given C program.

```
#include <stdio.h>
int main()
{
int a = 10, b = 7;
while (a > --b)
{
printf("\nKarachi");
a = a - 2;
}
return 0;
}
```

The number of times 'Karachi' will be printed upon execution of this program is

- A. three.
- B. four.
- C. five.
- D. ten.

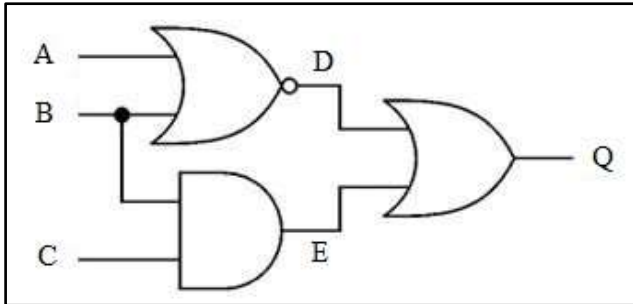
29. The statement that takes control of the program at the beginning of a loop for the next iteration is known as
- A. switch statement.
 - B. continue statement.
 - C. input function statement.
 - D. output function statement.

Use the given program to answer Q.30 and Q.31.

```
#include <stdio.h>
int main()
{
int y = 2;
while (y == 2)
{
y--;
printf ("%d", y);
}
return 0;
}
```

30. The output of this program is
- A. 0
 - B. 1
 - C. 2
 - D. 4
31. If the statement while (y == 2) is replaced with while (y == 10), then the number of times the body of while loop will be repeated is
- A. 0
 - B. 2
 - C. 8
 - D. 10
32. Which of the following logic gates takes the least number of inputs?
- A. OR Gate
 - B. NOT Gate
 - C. AND Gate
 - D. XNOR Gate

Use the given image of a logic circuit to answer Q.33 and Q.34.



33. The Boolean function at the output of this circuit is

- A. $Q = (\overline{AB}) + (BC)$
- B. $Q = (\overline{AB}) + (B + C)$
- C. $Q = \overline{(A + B)} + (BC)$
- D. $Q = (A + B) + (B + C)$

34. If the output value is $Q = 1$, then the input values of this logic circuit are

- A. $A = 0, B = 1, C = 0$
- B. $A = 0, B = 1, C = 1$
- C. $A = 1, B = 0, C = 1$
- D. $A = 1, B = 1, C = 0$

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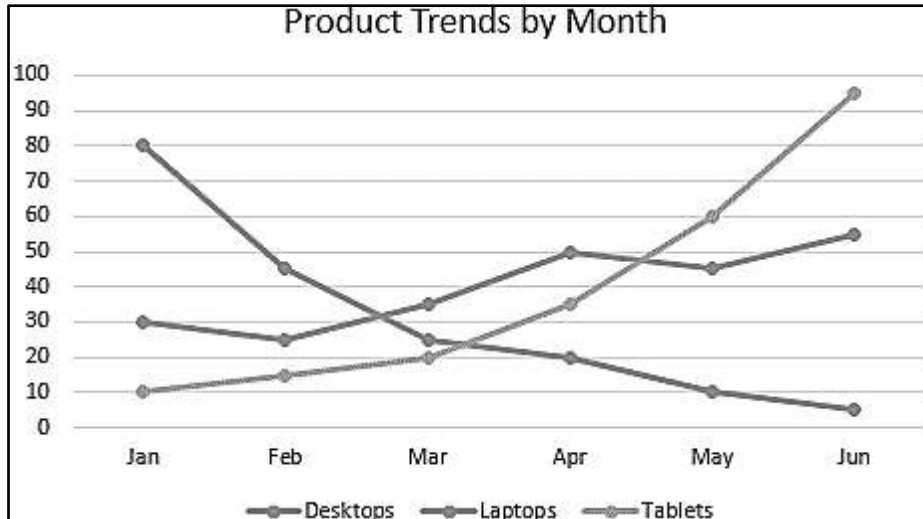
Use the given excel sheet to answer Q.35, Q.36 and Q.37.

	A	B	C	D	E	F	G
1	Student	Test1	Test2	Test3	Test4	Test5	Average
2	Amy	80	80	75	84		80
3	Bob	85	85	88	82		85
4	Cathy	88	88	95	78		87
5	David	87	87	65	90		82
6	Edward	67	67	75	80		72
7	Frank	75	75	95	80		81
8	Ginny	25	45	95	80		61
9	Hank	99	99	78	88		91

35. Which of the following is the CORRECT formula that should be used to calculate the average test score for Frank?
- A. = AVG (B + C + D + E)
 B. = AVG (B7, C7, D7, E7)
 C. = SUM (B7:E7) / 4
 D. = SUM (B7 – E7) / 4
36. The formula that should be used to calculate the number of students who scored more than 80 marks in **Test2** is
- A. = COUNT(C1:C9, "< 80")
 B. = COUNT(C2:C9, "> 80")
 C. = COUNTIF(B2:B9, "< 80")
 D. = COUNTIF(C2:C9, "> 80")
37. The formula that should be used to find the highest marks in **Test4** is
- A. = MAX(E2:E8)
 B. = MAX(E2:E9)
 C. = MAXIMUM(D2:D9)
 D. = MAXIMUM(E2:E9)

PLEASE TURN OVER THE PAGE

38. The given image of a chart is an example of a



- A. bar chart.
- B. pie chart.
- C. line chart.
- D. column chart.

39. Which of the following authentication methodologies is depicted in the given picture?



- A. Personal Identification Number
- B. Username and Password
- C. Access Card
- D. Biometrics

40. The pop-up block option in web browsers helps computers to protect against a/ an

- A. virus.
- B. worm.
- C. adware.
- D. spyware.

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