AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

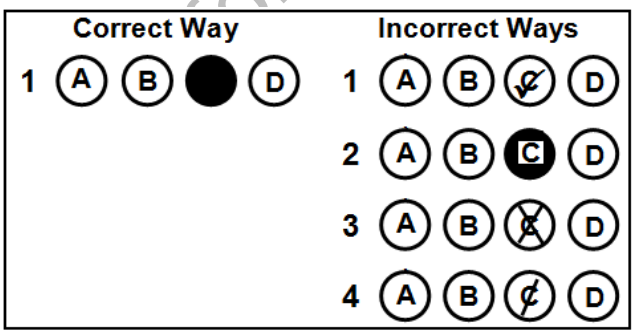
ANNUAL EXAMINATIONS (THEORY) 2024

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.



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 circles.
7. You may use a simple calculator if you wish.

1. Read the following process.

   Dividing a solution into steps and arranging them into proper order to solve a problem.

   The step of problem solving in the given description is

   A. defining the problem.
   B. analysing the problem.
   C. selecting the best solution.
   D. planning the solution of the problem.

2. In problem solving, the factors on which the selection of final solution should be based are

   I. Cost
   II. Speed
   III. Repetition
   IV. Complexity

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

3. Consider the given algorithm.

```
Step 1: Start
Step 2: J = 8
Step 3: K = 3
Step 4: L = J % K
Step 5: M = J / K
Step 6: N = L / M
Step 7: Z = L * M
Step 8: IF Z <= N THEN GOTO Step 4
Step 9: Output Z
Step 10: Stop
```

   The output of this algorithm is

   A. 1
   B. 2
   C. 4
   D. 6

4. The purpose of a program flowchart is to

   A. provide an overview of the program's functionality.
   B. visually represent the program's user interface.
   C. measure the program's performance metrics.
   D. document the program's source code.

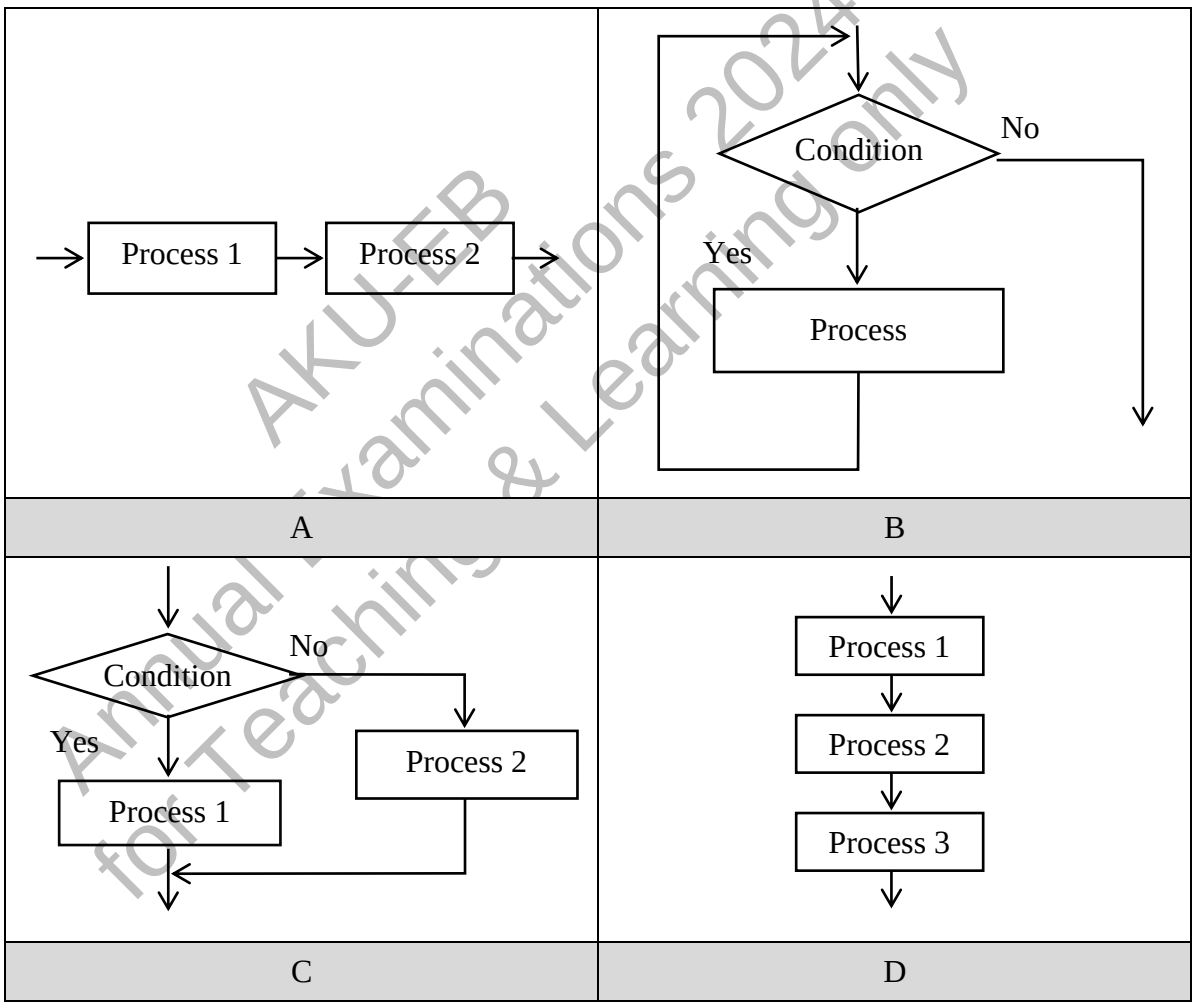
5. Consider the given statement.

Is A <= 50 ?

A flowchart symbol that MUST have this statement is

A. input.
B. output.
C. process.
D. decision.

6. The figure that shows the iteration control structure of flowchart is



7. The rules of a programming language to write a program are referred as

   A. syntax.
   B. semantic.
   C. debugging.
   D. compilation.

8. The type of programming language that is based upon the concept of modular programming is

   A. machine language.
   B. assembly language.
   C. structured language.
   D. procedural language.

9. Consider the following characteristics.

   - Easier to find and remove errors
   - Programs written are highly structured
   - Designed to make programming simple and less prone to error

   The type of programming language with the given characteristics is identified as

   A. machine language.
   B. low level language.
   C. assembly language.
   D. high level language.

10. In addition to text editor and compiler, a C language IDE consist(s) of

    I. Linker
    II. Loader
    III. Assembler

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

11. Which of the following functions MUST be present in a C program?

    A. printf()
    B. main()
    C. scanf()
    D. clrscr()

12. The memory space occupied by a double float is

    A. 2 bytes.
    B. 4 bytes.
    C. 8 bytes.
    D. 10 bytes.

13. The range of long double float is 10^{-4932}~10^{4932} with the precision of

    A. 6 digits.
    B. 7 digits.
    C. 15 digits.
    D. 30 digits.

14. In C language, the purpose of printf( ) function is to

    A. take input from user.
    B. display output to user.
    C. print each error in a program.
    D. show each loop in a program.

15. Which of the following is used to read a single character from the standard input stream and return it to the program?

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

16. Consider the given mathematical expression.

    $X^3Y^2 \leq (10 - 6 \times 8)$

    After converting it into C equivalent expression, the number of relational operator(s) will be

    A. one.
    B. two.
    C. six.
    D. seven.

17. Consider the given statement.

    A=(9÷5)+(12%3)×8^3

    With reference to C language, how many types of operators are CORRECT in this statement?

    A. Two
    B. Three
    C. Four
    D. Five

18. Consider the given program.

```
#include <stdio.h>
int main()
{
    int a = 5, b = 10, c = 15;
    a = b * c;
    ++a;
    b = a;
    --b;
    c = b + c - 5;
    printf("a = %d, b = %d, c = %d", a, b, c);
    return 0;
}
```

The output of this program is

A. a = 151, b = 151, c = 160
B. a = 151, b = 150, c = 160
C. a = 150, b = 151, c = 165
D. a = 151, b = 151, c = 165

19. Consider the given statement.

c = a && b;

To store value 1 in variable c, the values stored in variable a and variable b are

	Value Stored in Variable a	Value Stored in Variable b
A	0	0
B	1	0
C	0	1
D	1	1

20. Consider the given statement.

int y=2+3*6/2;

The value stored in the variable y is

A. 8
B. 10
C. 11
D. 15

21. Consider the given statement.

int z = 10 % 4 – 10 / 3 + 8 * 6 + 7

The expression 10 / 3 will give

A. 1
B. 2
C. 3
D. 4

22. In switch-case structure, the data type of expression should be

I. int
II. char
III. float

A. I only.
B. II only.
C. either I or II.
D. either II or III.

23. Consider the given program.

```
#include<stdio.h>
int main(){
  float side1, side2, side3;
  printf("Enter sides of triangle:");
  scanf("%f%f%f",&side1,&side2,&side3);
  if(side1 == side2 && side2 == side3)
    printf("The Given Triangle is equilateral");
  else if(side1 == side2 || side2 == side3 || side3 == side1)
    printf("The given Triangle is isosceles");
  else
    printf("The given Triangle is scalene");
  return 0;
}
```

The number of conditions in this program is

A. 1
B. 2
C. 3
D. 4

24. The structure that should be used to jump directly to a required condition is

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

25. Consider the given program.

```
#include<stdio.h>
int main(){
int a = 12, b = 8;
do{
   printf("Caterpillar \n");}
   while (a-- < b++);
return 0;
}
```

If we write the same code using while loop, then the difference in number of iteration will

A. not change.
B. be one less than do-while.
C. be two less than do-while.
D. be one more than do-while.

26. A for loop code is written to perform 5 repetitions with the condition i<=5

Which of the following expressions of this for loop will execute only once?

A. i--;
B. i++;
C. int i = 1;
D. int i = 5;

27. Consider the given program.

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

The output of this program is

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

28. If the condition is FALSE at the first iteration in do-while loop structure, then it will

A. give logical error.
B. execute the statement once.
C. execute the statement twice.
D. fail to execute the statement.

29. Consider the given program.

```
#include<stdio.h>
int main(){
int a = 12, b = 8;
do{
   printf("Caterpillar \n");}
   while (a-- < b++);
return 0;
}
```

If printf ("Caterpillar \n"); is replaced by printf ("%d",a); then the output will be

A. 8
B. 10
C. 11
D. 12

30. Consider the following code.

```
#include <stdio.h>
int main()
{
   int i=1;
   while (i<=5)
    {
        printf("%d ", i*=4);
        i=i+2;
    }

   return 0;
}
```

The given code will display the output

A. 4
B. 1 4
C. 1 3 5
D. 4 12 20

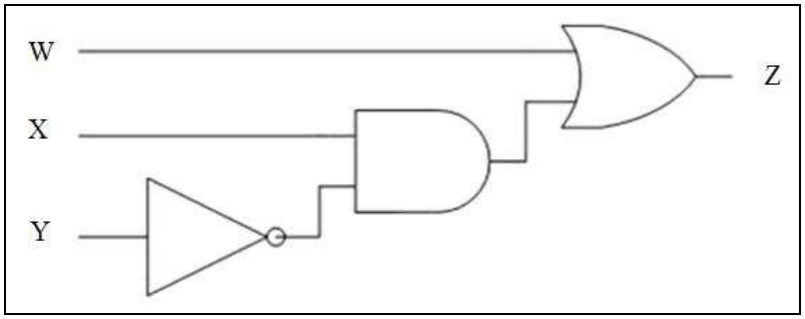
31. In C programming, the break statement is used to exit from a/ an

A. switch statement.
B. if statement.
C. for loop.
D. program.

32. The number of possible combinations in a truth table with three inputs are

A. three.
B. six.
C. eight.
D. twelve.

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



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

A. $Z = (X\bar{Y})W$
B. $Z = (X + \bar{Y})W$
C. $Z = (X\bar{Y}) + W$
D. $Z = (X + \bar{Y}) + W$

34. If the output value is Z = 0, then the input values of this logic circuit are

A. W = 0, X = 0, Y = 1
B. W = 0, X = 1, Y = 0
C. W = 1, X = 0, Y = 0
D. W = 1, X = 0, Y = 1

35. An absolute cell address begins with

A. $
B. !
C. %
D. &

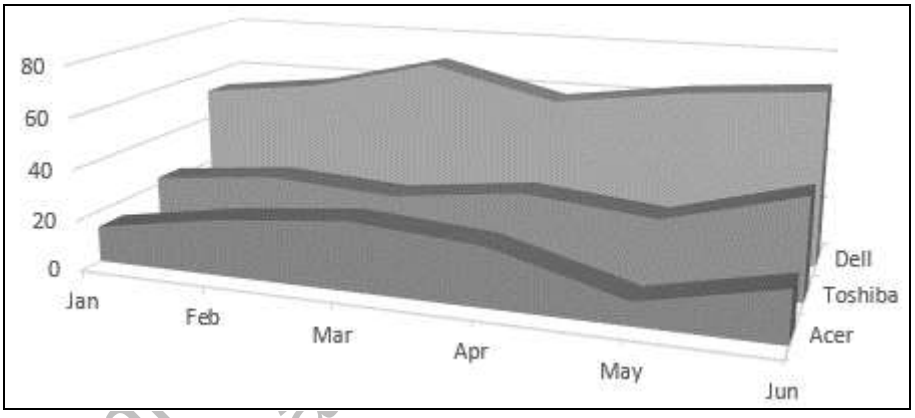
36. Consider the given image of an excel sheet.

	A	B	C	D
1	**Brand**	**Jan**	**Feb**	**Mar**
2	Acer	14	22	27
3	Toshiba	23	28	25
4	Dell	52	58	70
5	HP	41	37	55

The MS Excel formula to calculate the average number of laptops sold in the month of February (Feb) is

A. = AVG (C2 + C3 + C4 + C5)
B. = AVG (C1, C2, C3, C4, C5)
C. = SUM (C2:C5) / 4
D. = SUM (C1:C5) / 5

37. Consider the given chart created in MS Excel.



This chart is an example of

A. line chart.
B. bar chart.
C. area chart.
D. column chart.

38. You want to create a rule in Excel that highlights all cells in a column containing values greater than 100 in red.

The function that will be performed for the given purpose is

A. conditional formatting.
B. unlocking cells.
C. data validation.
D. data filtration.

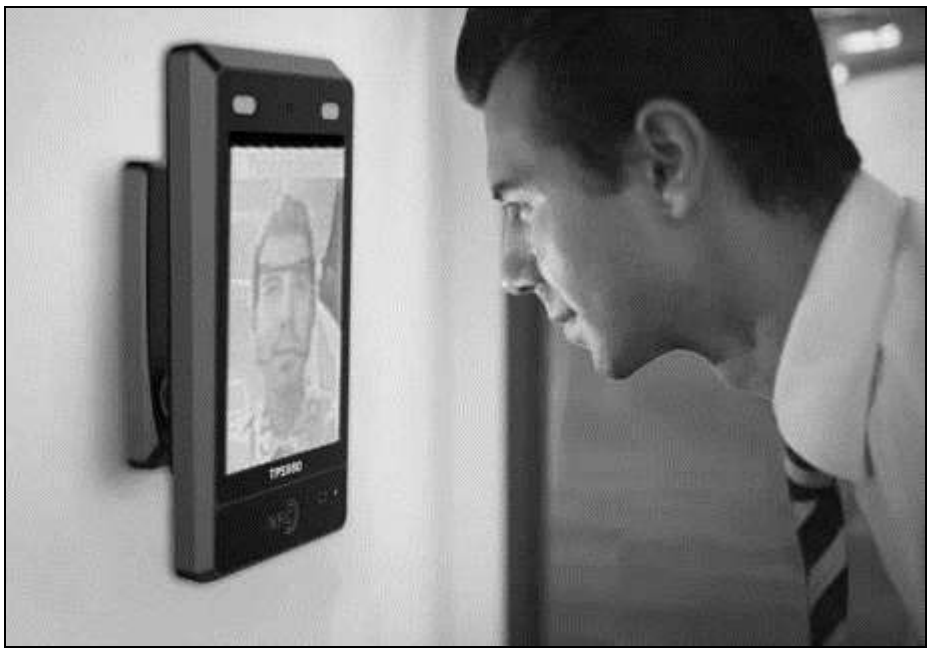
39. Omar has installed a malicious software on his laptop mistakenly.

This software collects information such as login timings, websites that are visited, files created or deleted and the data which is typed on keyboard.

This software is an example of

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

40. The given system is used to mark the attendance of employees in an organisation.



The authentication methodology used in this system is

A. biometrics.
B. access card.
C. username and password.
D. personal identification number.

END OF PAPER

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