AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

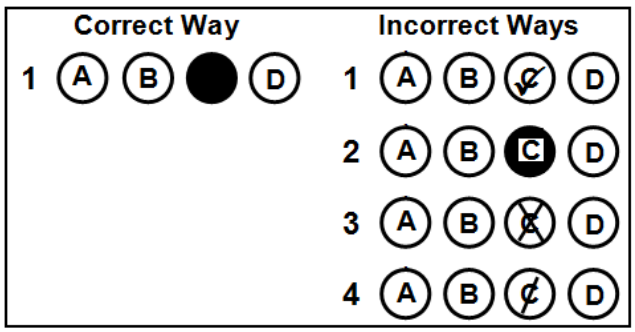
MODEL EXAMINATION PAPER 2023 AND ONWARDS

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.



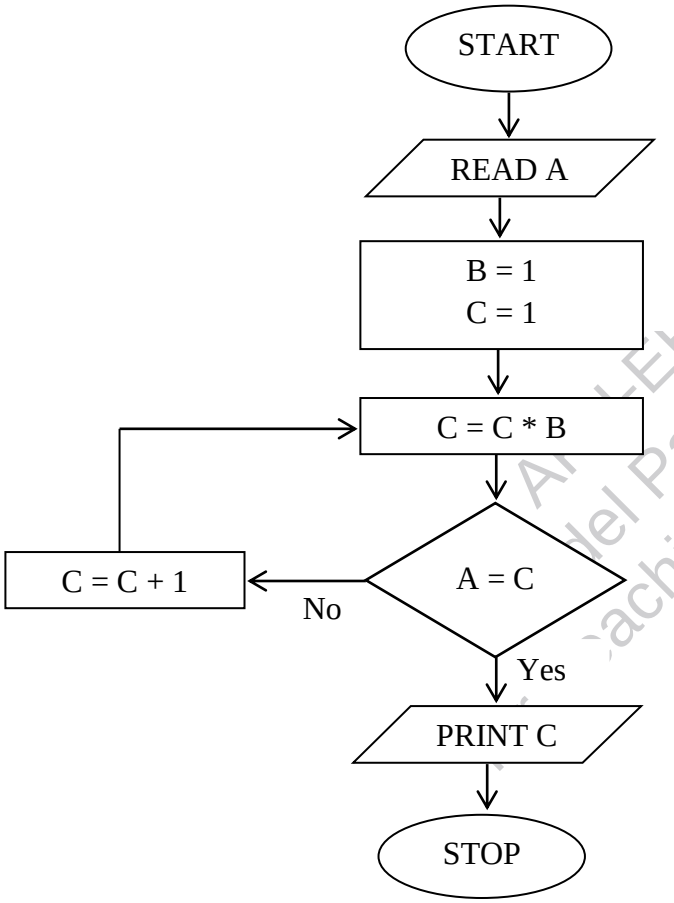
Candidate's Signature

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

1. 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.

2. Study the given flowchart.



   If the input value is 3, then the output value of the flowchart will be

   A. 1
   B. 2
   C. 3
   D. 6

3. In problem solving process, the step that comes after defining the problem is

   A. analysing the problem.
   B. finding the candid solution.
   C. planning the solution of the problem.
   D. selecting the best solution for the problem.

4. An algorithm that will give the output 10 is

Step 1: Start Step 2: K = 80 MOD 5 Step 3: Output K * 2 Step 4: Stop	Step 1: Start Step 2: K = 70 MOD 9 Step 3: Output K * 10 Step 4: Stop
A	B
Step 1: Start Step 2: K = 60 MOD 7 Step 3: Output K * 5 Step 4: Stop	Step 1: Start Step 2: K = 50 MOD 3 Step 3: Output K * 5 Step 4: Stop
C	D

5. Consider the given algorithm.

```
Step 1: Start
Step 2: INPUT W
Step 3: X = 2, Y = 3
Step 4: X = X * Y
Step 5: Y = X + Y
Step 6: PRINT Pakistan
Step 7: IF X <= W THEN GOTO Step 4
Step 8: Stop
```

If the input is 50, then the number of times the word Pakistan is printed will be

A. 2
B. 3
C. 4
D. 6

6. A statement calculates an average of five integers.

A flowchart symbol that must have the statement is a/ an

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

7. C programming allows a program to run in an operating system that is different from the one it was created in.

   The given characteristic of C programming makes it a

   A. portable language.
   B. structured language.
   C. middle-level language.
   D. compiler-based language.

8. A program outputs the word Hello upon its execution. The minimum number of functions that must be used in this program is

   A. one.
   B. two.
   C. three.
   D. four.

9. Which of the following options shows the CORRECT features of machine language?

• Requires a translator • Consists of symbolic codes • Is machine-oriented language	• Consists of zeros and ones • Is human-oriented language • Does not require a translator
A	B
• Consists of zeros and ones • Does not require a translator • Is machine-oriented language	• Requires a translator • Consists of symbolic codes • Is human-oriented language
C	D

10. When a program file named as **FirstProgram** is compiled, it has different extensions at different stages of the compilation process.

    The CORRECT sequence of processing of the file, on the basis of extensions, at different stages is

    A. FirstProgram.c → FirstProgram.obj → FirstProgram.exe
    B. FirstProgram.exe → FirstProgram.obj → FirstProgram.c
    C. FirstProgram.obj → FirstProgram.c → FirstProgram.exe
    D. FirstProgram.exe → FirstProgram.c → FirstProgram.obj

11. The data type that should be used to store the home address of a person is

    A. char.
    B. long.
    C. float.
    D. double.

12. C programming language is an example of a/ an

A. machine language.
B. assembly language.
C. procedural language.
D. object-oriented language.

13. The process of finding and removing errors is called

A. compiling.
B. debugging.
C. assembling.
D. interpreting.

14. The following code is written to output the phrase Break the Ice but it contains some error(s).

```
#include <stdio.h>
int main()
{
   printf("Break the Ice);
   return 0
}
```

The number of errors in the code is

A. one.
B. two.
C. three.
D. four.

15. For getch( ) function, the TRUE statement is that

A. it is a type of user-defined C function.
B. the header file of getch( ) function is stdio.h
C. any C program will not compile in the absence of the getch( ) function.
D. it prompts the user to press a character and that character is not printed on the screen.

16. Read the given incomplete C program.

```
#include <stdio.h>
int main(void)
{
        int x, y;
        float z;
```

The remaining part of the program to get the output 9.60 is

x = 3.2;
y = 3.2;
z = 3.2;
printf("%.2f", x + y + z);
}
	x = 3.3;
	y = 3.1;
	z = 3.2;
	printf("%.2f", x + y + z);
	}

A	B

x = 3.1;
y = 3.1;
z = 3.4;
printf("%.2f", x + y + z);
}
	x = 3.4;
	y = 3.5;
	z = 3.6;
	printf("%.2f", x + y + z);
	}

C	D

17. The given C program will

- input the width (W) and length (L) values of a rectangle.
- calculate and output the area (A) of a rectangle.

However, there are a few errors in the shaded segment of this program.

(**Note:** Area of Rectangle = width × length)

```
#include <stdio.h>
int main(void)
{
        int A, W, L = 0;
        scanf("%.1f  %.1f", W, L);
        A = W * L ;
        printf("Result = %.1f", A);
        return 0;
}
```

The code that should replace the shaded segment of the program to make it error free is

scanf("%d %d", W, L);
A = W * L ;
printf("Result = %d", A);
	scanf("%.1f %.1f", &W, &L);
	A = W * L ;
	printf("Result = %.1f", A);

A	B

scanf("%d %d", &W, &L);
A = W * L ;
printf("Result = %d", A);
	scanf("%.1f %.1f", W, L);
	A = W * L ;
	printf("Result = %.1f", A);

C	D

18. Read the given C program.

```
#include<stdio.h>
int main(void)
{
printf("Hello\nWorld");
return 0;
}
```

The output of the given C program will be

"Hello\nWorld"	Hello\nWorld
A	B
Hello World	Hello /nWorld
C	D

19. Consider the given statement.

int X = 9/2;

Upon execution of the statement, which of the following values will be stored in X?

A. 0
B. 4
C. 4.5
D. 5

20. Which of the given programs will give the output Z on the screen?

#include <stdio.h>
void main(void)
{
putchar("XYZ");
}
	#include <stdio.h>
	void main(void)
	{
	putchar('XYZ');
	}

A	B

#include <stdio.h>
void main(void)
{
puts("XYZ");
}
	#include <stdio.h>
	void main(void)
	{
	puts('XYZ');
	}

C	D

21. Consider the given program.

```
#include <stdio.h>
void main()
{
   float a = 1244.6713877;
   printf("%.4f\n", a);
}
```

The output of the program is

A. 1244.67138e+02
B. 1.244671e+03
C. 1244.671387
D. 1244.6714

22. Read the given program.

```
#include<stdio.h>
void main( )
{
  int a = 5;
  int b = 10;
  if(a < 5 || b > 10)
    printf("%d", a * b);
  else
    printf("%d", b / a);
}
```

The output of the given code is

A. 2
B. 5
C. 10
D. 50

23. Which of the following statements is a control structure?

A. For loop
B. If-else statement
C. Format specifier
D. Pre-processor directive

24. If the switch variable does not match any of the case constants in switch statement, then the control goes to the

A. if keyword.
B. else keyword.
C. break keyword.
D. default keyword.

25. Read the given C program.

```
#include <stdio.h>
int main(void)
{
    int x, y, z = 0;
      for(y =1; y <= 4; y++)
            {
   scanf("%d", &x);
   if( (x + 3) % 5 == 0)
   z = z + x;
}
    printf("result = %d", z);
return 0;
}
```

If the input of the program is the given four numbers, i.e. 4, 5, 6, 7, then the output will be

A. 0
B. 5
C. 7
D. 10

26. Consider the following C language program.

```
#include<stdio.h>
int main( )
{
          int j = 1;
          int k = 3;
          while(j < k)
          {
          k = k + 2;
          printf("\nIslamabad");
          j = j + 3;
          }
          return 0;
}
```

If the given program is executed, then the number of times Islamabad is printed on the screen will be

A. one.
B. two.
C. three.
D. four.

27. Which of the following is a repetition structure?

A. Do While loop
B. Switch statement
C. Escape sequence
D. Pre-processor directive

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

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

Use the given program to answer Q.29 and Q.30.

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


29. The output of the 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

30. Which of the following loop statements should be used in the program to repeat the code three times inside the loop body?

A. for (n = 3; n > 1 ; n++)
B. for (n = 1; n < 3 ; n++)
C. for (n = 1; n++ < 6 ; n++)
D. for (n = 1; n++ > 6 ; n++)

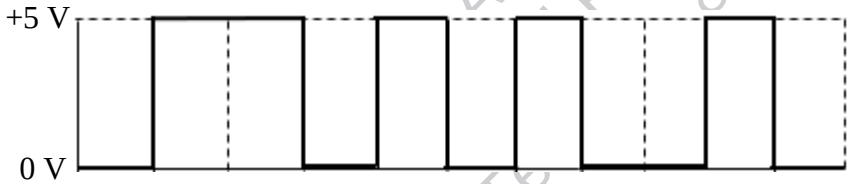
31. Consider the given program.

```
#include <stdio.h>
int main()
{
   int n = 10, i;
   for (i = 1; i <= n; ++i)
   {
   printf("Vision\n");
   }
   return 0;
}
```

After the given loop condition becomes false, the value of variable i is

A. 1
B. 9
C. 10
D. 11

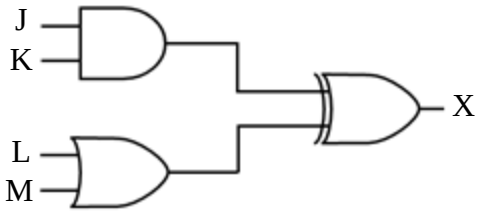
32. Consider the given picture of a waveform of a bit stream.



The bit stream that is represented in the given picture is

A. 01101010010
B. 10010101101
C. 01010101010
D. 01001010110

33. Consider the given logic circuit.



What should be the input values of **J**, **K**, **L** and **M** to get the output **X** = 1?

	J	**K**	**L**	**M**
A	1	1	1	1
B	1	0	0	1
C	1	1	1	0
D	0	0	0	0

34. Consider the given Karnaugh map (K-map) of a Boolean expression.

	$\overline{B}$	B
$\overline{A}$	1	1
A		1

The reduced form of expression obtained from this K-map is

A. $A + B$
B. $A + \overline{B}$
C. $\overline{B} + B$
D. $\overline{A} + B$

35. Consider the given part of an MS Excel sheet.

	A	B	C
1	5	4	1
2	10	6	3
3	15	8	5
4	20	10	7
5	25	12	9
6	30	14	11

The MS Excel formula that will add the values of cells A1, A2, A3, A4, A5 and B2, giving the result of 81, is

A. =ADD(A1:A5:B2)
B. =ADD(A1:A5,B2)
C. =SUM(A1:A5:B2)
D. =SUM(A1:A5,B2)

36. Shazia, a class teacher, has the following data representing the ages (in years) of 7 students in her class.

	A	B	C
1	14		
2	13		
3	15		
4	14		
5	14		
6	13		
7	15		

The MS Excel formula, with appropriate cell range, to calculate the number of students whose age is 14 years will be

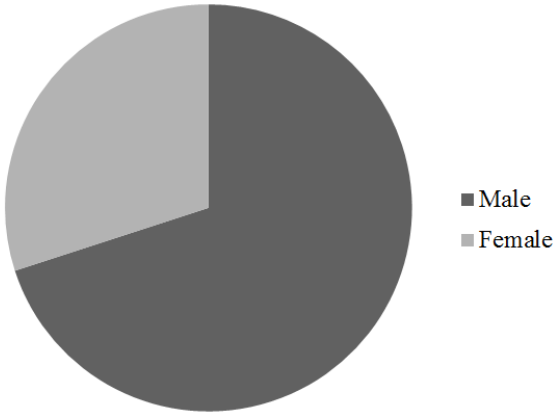
A. =COUNTIF("=14",A1:A7)
B. =COUNTIF(=14,"A1:A7")
C. =COUNTIF(A1:A7:"=14")
D. =COUNTIF(A1:A7,"=14")

37. All of the following file formats can be opened in MS Excel EXCEPT

A. exe
B. html
C. xml
D. xlsx

END OF PAPER

38. In MS Excel, the given pie chart would be depicted in a table as



Male	Female
70	30

A

Female	Male
30	70

B

70	Male
30	Female

C

Female	30
Male	70

D

39. A program that enters through the weakness in the operating system of a computer is a/ an

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

40. Which of the following security measures ensures the receiver that the message is coming from the intended sender and not a hacker?

A. Confidentiality
B. Authentication
C. Decryption
D. Encryption

Please use this page for rough work