



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

BRIDGING EXEMPTION TEST SEMESTER II, SESSION 2022/2023

COURSE CODE	:	BSPT 0024
COURSE	:	FUNDAMENTALS OF PROGRAMMING
PROGRAMME	:	BRIDGING PROGRAMME
DURATION	:	2 HOURS
DATE	:	MARCH 2023

INSTRUCTION TO CANDIDATES:

1. Answer all the questions.
2. All answers must be written in the answer booklet provided. Use a new page for each question.
3. The full marks for each question or section are shown in the bracket at the end of the question.
4. All steps must be shown clearly.
5. You are not permitted to take the exam paper and the answer booklet(s) out of the exam hall.

WARNING!

Students caught copying/cheating during the examination will be liable for disciplinary actions and SPACE may recommend the student to be expelled from the study.

This examination question consists of (15) printed pages only including this page.

PART A: MULTIPLE CHOICE QUESTIONS

[45 MARK – 1.5 per each]

1. What is the correct definition of a computer?
 - A. is a programmed device with a set of instructions to perform specific tasks
 - B. artificial intelligence machine to do simulation analysis
 - C. electronic devices to create the process of simple calculation
 - D. none of the above.

2. High level programming languages such as C, C++, Pascal, Cobol, Fortran, and Java are called _____.
 - A. Low programming languages
 - B. assembly languages
 - C. computer languages
 - D. compiled languages

3. _____ refers to mistakes in a computer program that results in incorrect or unexpected behavior.
 - A. simple errors
 - B. data errors
 - C. logical errors
 - D. computer errors

4. Which of the following is the **CORRECT** structure for the given C++ program segment below?

```
#include <iostream>
using namespace std;
```

- A. Pre-processor directives
- B. Data declaration
- C. Sequence
- D. Looping

5. Which of the following is the **CORRECT** C++ statement?

- A. `cin << 'A' << endl;`
- B. `cout >> 'Hello world' << \n ;`
- C. `cout << "Programming..." << endl;`
- D. `cin >> "programming language" >> endl;`

6. Select suitable logical expressions to generate **FALSE** output.

Banana = true

Apple = false

- A. `Banana || Apple`
- B. `Banana && Banana`
- C. `Apple || !Banana`
- D. `Apple || Banana`

7. What is the output of the following program segment?

1	<code>bool i=true;</code>
2	<code>cout << i+i+10<< endl;</code>

- A. 12
- B. 13
- C. 15
- D. 20

8. Identify the line number that causes error in this C++ code.

1	<code>#include <iostream></code>
2	<code>using namespace std;</code>
3	<code>int main()</code>
4	<code>{</code>
5	<code>int A, B;</code>
6	<code>Sum=A+B</code>
7	<code>cout<<"Sum= " << Sum << endl;</code>
8	<code>return 0;</code>
9	<code>}</code>
10	

- A. Line 2
 - B. Line 6
 - C. Line 5
 - D. Line 10
9. Programmer can use _____ data type for output file only and it will create the output file if the file does not exist.
- A. ofstream
 - B. ifstream
 - C. fstream
 - D. iostream
10. What is the correct programming language structure that meets this statement?
“A set of instructions or structures are repeated in a sequence according to a specified number of times or until a condition is met”
- A. Sequence
 - B. Loop
 - C. Branch
 - D. Function
11. What will be the value of **X= pow (5, 4)**?
- A. 675
 - B. 655
 - C. 625
 - D. 685
12. How many bits are there in one Byte?
- A. 6 bits
 - B. 9 bits
 - C. 7 bits
 - D. 8 bits

13. Which of the following is **TRUE** about user-defined functions?
- A. User-defined functions come with the compiler
 - B. Programmer doesn't have to write the function definition
 - C. Function definition may be written after function call, provided the function prototype is mentioned before the function call.
 - D. User defined function must always return a value.
14. Why debugging process is important in C++ programming code?
- A. Can detect and remove of existing and potential errors or bugs
 - B. Can renew the existing programming code
 - C. Create many choices of C++ code to be executed
 - D. Simplify the complex code for the programmer
15. Give the **CORRECT** meaning of the flowchart.
- A. A set of images that elaborate of the arithmetic calculations
 - B. Collection of file to execute the C++ code
 - C. Contain sentences explain whole process
 - D. represents an algorithm in graphical symbols
16. What is the meaning of the flowchart geometrical shape shown in Figure 1?



Figure 1

- A. Start / End
 - B. Input / Output
 - C. Process
 - D. Rules
17. Which statement is **CORRECT** about the local and global variables?
- A. Local variable will be initialized to 0 automatically
 - B. Global variable will be initialized to 0 automatically
 - C. Local variable can be accessed by any functions in the program
 - D. Global variable only can be accessed by the functions it is declared

18. How to input multiple values from user in one line in C++?

- A. `cin >> value1, value2 >> endl;`
- B. `cin >> value1 >> value2 >> endl,`
- C. `cin << value1 && value2 << endl;`
- D. `cin >> value1 >> value2 >> endl;`

19. Which of the following operations can be carried out by **#include<iostream>**?

- A. Display the average result of three numbers
- B. Read mathematical expression
- C. Read input from the keyboard
- D. Format the floating-point values on the output operations

20. What is the **CORRECT** definition for the Trace Table?

- A. allow developers to test algorithms in order to make sure there are no logical errors
- B. specific table to check input and process list
- C. database table that contain primary id for all inputs
- D. None of the above.

21. Based on the pseudocode in Figure 2, what is the **CORRECT** output when the value n is equal to 7?

```
1. Start
2. Read n
3. If n modulus 2==0
3.1 Print "This is even number"
3.2 Go step 6
4. Else
4.1 Print "This is odd number"
5. End if
6. End
```

Figure 2

- A. This is even number
- B. This is odd number
- C. This is even and odd
- D. This is odd and even

22. Given variable `int x=11, y=5, z=-3;`. Choose the logical expression that produce **TRUE** logic.

- A. `(x>y) && (y>z)`
- B. `(x<y) && (z>y)`
- C. `(x<=z) || (y==z)`
- D. `!(x>=z)`

23. What is the output when the program statement in Figure 3 is executed?

```
int age;  
age=19;  
cout<< age;  
age=21;  
cout << age;
```

Figure 3

- A. 1921
- B. 19
21
- C. 19 21
- D. 21

24. Given the following program segment, choose the possible values that should be entered to print **"That number is acceptable"**.

```
1 int number;  
2 cin >> number;  
3 if (number > 35 && number < 80)  
4     cout << "That number is acceptable. \n";  
5 else  
6     cout << "That number is not acceptable. \n";
```

- A. 28
- B. 88
- C. 48
- D. 18

25. Given the following program segment, to produce the output **3 6 9 12 15**, what loop condition should be used in the blank below?

1	int M=0;
2	do {
3	M = M+3;
4	cout<< M << ' ';
5	} while (_____);

- A. M<=15
- B. M<12
- C. M=16
- D. M>=9

26. What is the final value of cnt, for the following program segment?

1	int cnt =2, cookies =3;
2	while (cnt <=99)
3	{
4	cookies=cookies + 5;
5	cnt++;
6	}
7	cout<< "Loop Count = " << cnt << endl;

- A. 100
- B. 99
- C. 8
- D. 101

27. What is the INCORRECT data types to represent floating-point numbers?

- A. float
- B. double
- C. int
- D. long double

28. **fstream** object must specify mode on the open statement. What is the **CORRECT** format for **fstream**?

- A. `fstream infile ("demofile.txt", ios::input);`
- B. `fstream infile.open ("demofile.txt", ios::input);`
- C. `fstream infile ("demofile.txt", ios::in);`
- D. `fstream infile.open ("demofile.txt", ios::in);`

29. Given the following code, what is the value of the variable *x*?

```
int fun[5] = {3, 2, 5, 7, 32, 0};  
  
int x = fun[3];
```

- A. 3
- B. 5
- C. 7
- D. 0

30. Given the following array, what is the value referred by **q_array[0][2]**?

3	2	4
7	6	8
0	0	1

- A. 4
- B. 2
- C. 8
- D. 0

PART B – STRUCTURED QUESTIONS**[55 Marks]**

Answer all the questions and write your answer in the space provided.

Question 1 (12 marks)

a) Convert the following decimal numbers to binary in 8-bits representation.

i. $125_{10} =$ (3marks)

ii. $38_{10} =$ (3marks)

b) Convert the following binary numbers to hexadecimal.

i. $00101101_2 =$ (3marks)

ii. $01111100_2 =$

(3marks)

Question 2 (10 marks)

Trace the output of the following pseudo code below by completing the trace table in Table 1.

1	Start
2	Set sum = 15
3	Set count = 3
4	Do
5	Print sum
6	sum = sum * count
7	count = count + 2
8	While (sum < 1200)
9	End

Sum	count	Sum<1200	Output
15	3		15

Table 1

Question 3 (14 marks)

The following C++ Program cannot be compiled. It has syntax errors and incorrect sequence order. Rearrange the lines, trace and correct the program to be compiled and executed to produce the output as indicated in Figure 4. Write your answer in Table 2.

1	include <iostream>
2	using namespace std
3	
4	int main();
5	{
6	SUM=A+B+C
7	int A, B, C
8	int SUM
9	
10	cout<< "Enter value A: " << endl;
11	cin>> A;
12	cout<< "Enter value B: " << endl;
13	cin>> B;
14	cout<< "Enter value C: " << endl;
15	cin>> c;
16	}
17	Cout < "\nSUM (A+B+C): " < SUM << endl;
18	return ;

```
Enter value A:
3
Enter value B:
4
Enter value C:
5

SUM (A+B+C): 12

-----
Process exited after 7.086 seconds with return value 0
Press any key to continue . . .
```

Figure 4

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	

Table 2

Question 4 (8 marks)

What will the following code segment print on the screen?

```
1 int a = 8, b = 2;  
2 bool x = true;  
3  
4 cout<< ((x + a) <= (b + 4)) << endl;  
5 cout<< (((x == 0) + 1) && ((x + 1) == 1)) << endl;  
6 cout<< ((b != 3) || (b != a)) << endl;  
7 cout<< ((a==b)+5) > (x-b)) << endl;
```

Answer:

Question 5 (6 marks)

There are five operators shown in the expression as in the given Figure 5. Label the order of execution for each operator in the boxes as stated in the expression. The operator that will be executed first should be labeled as 1, the second operator to be executed should be labeled as 2, and so on. Finally, give the result of the expression according to the sequence of executions.

int Z	=	52	+	23	%	3	-	4	*	(10	/	2)

Figure 5

Answer: Z = _____

Question 6 (5 marks)

Draw the complete flowchart based on the given pseudocode in Figure 6.

<ol style="list-style-type: none">1. Start2. Read a, b, c3. Calculate Sum, Average4. Print Average5. End
--

Figure 6