



College of Engineering Science & Technology
School of Electrical and Electronics Engineering
School of Mechanical Engineering
School of Building and Civil Engineering
Bachelor of Engineering
BEN 507 – Introduction to Programming
Question Paper
Final Examination: Semester 2, 2016

Instructions

Read the following instructions before writing

1. Time Allowed: 3 hours with additional 10 minutes reading time.
2. Answer Booklet: All answers are to be written in the Answer Booklet.
3. Write your ID Number on all the sheets of paper in your Answer Booklet that you use. Please also number all the sheets paper/pages that you use.

Sections	Question	Marks
Section A: Multiple Choice Questions	Question: 1-10. All compulsory	10
Section B: Short Answers Questions	Question: 11-20. Answer any 8 questions.	40
Section C: Long Answer Questions	Question: 21-26. Answer any 5 questions.	50
Total		100

Section A

Answer the following ALL multiple choice questions. [101 Mark = 10 Marks]

- Which of the following gives the memory address of integer variable a?
 - address(a)
 - a
 - &a
 - *a
- Which of the following is an output statement in C++?
 - Input
 - Output
 - cout
 - cin
- What is the equivalent value in decimal to $(110101)_2$?
 - 32
 - 16
 - 53
 - 64
- 1 Kilobyte is equal to _____
 - 10 Mega Bytes
 - 1024 Bytes
 - 8 bits
 - 1024 Giga Bytes
- Which of the following is a loop structure?
 - if
 - if-else
 - repeat until
 - while
- Which of the following statements creates a two-dimensional array that contains five rows and three columns?
 - int matrix[3][5]
 - int matrix[5][4]
 - int matrix[5][3]
 - int matrix[3][4]
- Which of the following is a correct line comment statement in C++?
 - // line comment
 - **line comment
 - {line coment}
 - */line comment */

8. When passing by reference the function gets _____
- the data contained in the variable
 - the variable names
 - the memory address of the variable
 - None of the above
9. The behavior of an object is defined by _____
- data fields
 - a set of functions
 - properties
 - None of the above
10. What is the output of the following program?
- ```
int x=8000
if (x>0)
x++
cout<<"x is "<<x<<endl;
```
- 7999
  - 8000
  - 8001
  - 7998

### Section B

Answer the following ANY EIGHT questions.

[8×5 Marks = 40 Marks]

11. (a) What are the statements to read and display a string on the console? [2+3]
- (b) Identify and fix the errors in the following code:
- ```
include<io stream>;
using namespace std
int main()
{
// Display welcome to Fiji National University
cout<< Welcome to Fiji National University<<endl;
system(pause);
return 0;
}
```
12. Given an airplane's acceleration a and take-off speed v , we can compute the minimum runway length needed for the airplane to take off using the following formula:
- $$\text{length} = \frac{v^2}{2a}$$
- Write a program that prompts the user to enter v in meters/second and acceleration a in meters/square seconds and displays the minimum run way length in meter [5]

13. (a) List six comparison operators and provide an example for each of them.

[3+2]

(b) What is wrong in the following code?

```
if radius>=0
{
area= radius*radius*Pi;
cout<<" The area for the circle of "<< "radius"<<radius<<"is"<<area;
}
```

14. What are the three parts of a **for** loop control? Write a **for** loop that prints the numbers from 1 to 150.

[5]

15. (a) Identify the global variables and the local variables in the following program. What will be the output of the code?

[3+2]

```
#include<iostream>
using namespace std;
int j=40;
void p( )
{
int i=5;
static int j=5;
i++;
j++;
cout<<"i is "<<i<<endl;
cout<<"j is "<<j<<endl;
}
int main( )
{
p( );
p( );
}
```

(b) Identify and correct the errors in the following program:

```
void p(int i)
{
int i=5;
cout<<" i is "<<i<<endl;
}
```

16. (a) How do you declare and create an array?

[3+2]

(b) Which of the following statements are valid array declarations?

```
double d[30];
char [30] r ;
int i[ ]=(3,4,5,2);
float f[ ] = {2.3,4.5,6.4};
```

17. (a) Declare and create a 4×5 int matrix. [3+2]
 (b) What is the output of the following code?

```
int array [5][6];
int x[ ] = {1,2};
array [0][1]=x[1]
cout<<"array [0][1] is "<<array[0][1];
```

18. Define a C++ class for circle with an example. [5]

19. How do you declare and create a pointer variable? Does a local pointer variable have a default value? [5]

20.a) What is wrong in the following program? [2+3]

```
void p(int i)
{
cout<<i<<endl;
}
int p(int j)
{
cout<<j<<endl;
}
```

(b) Identify and fix the errors in the following code:

```
int function1(int n)
{
cout<<n;
}
function2(int n,m)
{
n+=m;
function1(3.4);
}
```

Section C

Answer the following ANY FIVE questions.

[5×10 Marks = 50 Marks]

21. Write syntax, flow chart and an example with a C++ source code for the following [3+4+3]
 (a) Nested if –else condition
 (b) for loop
 (c) do-while loop
22. Write a C++ program to multiply two square matrices using two dimensional arrays. [10]
23. Write the C++ code for a program to display first 100 prime numbers. [10]
24. (a) What are steps in developing C++ programs using Dev C++? [4+2+3]
 (b) How do you denote a comment line and a comment paragraph in C++?
 (c) Describe syntax errors, runtime errors and logical errors.

25.(a) What are the differences between the following two arrays?

[3+7]

```
char s1[ ]={'a','b','c'};  
char s2[ ]= "abc";
```

(b) Suppose s1 and s2 are defined as follows:

```
char s1[ ] = "abc";  
char s2[ ] = "efg";
```

Are the following expressions /statements true?

(i) s1="good"

(ii) s1<s2

(iii) s1[10]

(iv) s1[10]<s2[0]

(v) strcpy(s1,s2);

(vi) strcmp(s1,s2)

(vii) strlen(s1)

26.(a) What is an inline function? How do you define an inline function?

[6+4]

(b) Which of the following function declarations are illegal?

```
void t1(int x, int y = 0, int z);
```

```
void t2(int x=0, int y = 0, int z);
```

```
void t3(int x, int y = 0, int z=0);
```

```
void t4(int x=0, int y = 0, int z=0);
```

-THE END-