Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Science

End Sem (Odd) Examination Dec-2018

BC3CO02 Problem Solving and Programming-I

Programme: B.Sc. (CS) Branch/Specialisation: Computer Science

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. The symbol shown in the Figure in flow chart represents **1**

(a) In-connector (b) Out-connector
(c) Output (d) End

ii. Flowcharts and Algorithms are used for **1**
(a) Better Programming
(b) Efficient Coding
(c) Easy testing and Debugging
(d) All of these

iii. What is the output of this C code? **1**

```
#include <stdio.h>
void main()  {
   static int x;
   printf("x is %d", x);  }
```

(a) 0 (b) 1 (c) Junk value (d) Run time error

iv. Which of the following is not a valid variable name declaration? **1**
(a) int __a3; (b) int __3a; (c) int __A3; (d) None of these

v. Switch statement accepts _____. **1**
(a) Int (b) Char (c) Long (d) All of these

P.T.O.

vi. How many times i value is checked in the below code? **1**

```
#include <stdio.h>
int main()    {
   int i = 0;
   do {          i++;
      printf("in while loop\n");       } while (i < 3);     }
```

(a) 2 (b) 3 (c) 4 (d) 1

vii. If we have declared an array described below - **1**
int arr[6];
then which of the following array element is considered as last array element?
(a) arr[0] (b) arr[5] (c) arr[6] (d) arr[4]

viii. What is the right way to initialize array? **1**
(a) int num[6] = { 2, 4, 12, 5, 45, 5 };
(b) int n{} = { 2, 4, 12, 5, 45, 5 };
(c) int n{6} = { 2, 4, 12 };
(d) int n(6) = { 2, 4, 12, 5, 45, 5 };

ix. Preprocessor Directives are used for - **1**
(a) Macro Expansion (b) File Inclusion
(c) Conditional Compilation (d) All of these

x. Which of the following cannot be a structure member? **1**
(a) Another structure (b) Function
(c) Array (d) None of these

Q.2 i. What is an algorithm? **2**

ii. What is Flowchart? What are the symbols of Flowchart? **3**

iii. Write the algorithm and draw the flow chart to find factorial of a given number. **5**

OR iv. Write the algorithm and the draw flow chart to find roots of Quadratic equation $ax^2 + bx + c = 0$ **5**

Q.3 i. Distinguish between character constant and string constant. **2**

ii. What is scope and lifetime of a variable? Explain auto, static, register and extern storage classes using suitable example. **8**

OR iii. What do you mean by Type Declaration Instruction? Explain utility of Long, Short, Signed and unsigned using suitable example. **8**

Q.4 i. Explain different relational operators available in C. **4**

ii. What is the requirement of loop in programming? Compare various loops available in C? **6**

OR iii. Explain the following using general syntax and example. **6**
(a) if (b) if-else (c) goto

Q.5 i. What is an array? Explain memory map of 1D and 2D Array with example. **4**

ii. Write a C language program to read two matrix and add them. **6**

OR iii. What is string? Explain any three string functions with suitable example. **6**

Q.6 Attempt any two:

i. What is Structure? Write a C language program to define structure containing course_name, number_of_students and role_number. Read 3 records and displays it. **5**

ii. What do you mean by pre-processor? What are the advantages of preprocessor? Explain two forms of #include directive. **5**

iii. What is Union? How union different from structure. Describe with example. **5**

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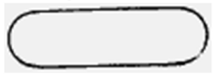
Marking Scheme

BC3CO02 Problem Solving and Programming-I

Q.1 i. The symbol shown in the Figure in flow chart represents **1**



(d) End

ii. Flowcharts and Algorithms are used for **1**

(d) All of these

iii. What is the output of this C code? **1**

```
#include <stdio.h>
void main()    {
   static int x;
   printf("x is %d", x);    }
```

(a) 0

iv. Which of the following is not a valid variable name declaration? **1**

(d) None of these

v. Switch statement accepts _____. **1**

(d) All of these

vi. How many times i value is checked in the below code? **1**

```
#include <stdio.h>
int main()    {
   int i = 0;
   do {          i++;
      printf("in while loop\n");        } while (i < 3);      }
```

(b) 3

vii. If we have declared an array described below - **1**

int arr[6];

then which of the following array element is considered as last array element?

(b) arr[5]

viii. What is the right way to initialize array? **1**

(a) int num[6] = { 2, 4, 12, 5, 45, 5 };

ix. Preprocessor Directives are used for - **1**

\(d) All of these

x. Which of the following cannot be a structure member? **1**

(b) Function

Q.2 i. Definition of algorithm **2**

ii. Definition Flowchart 1 mark **3**
Symbols 2 marks

iii. Algorithm 2.5 marks **5**
Flow chart 2.5 marks

OR iv. Find roots of Quadratic equation $ax^2 + bx + c = 0$ **5**
Algorithm 2.5 marks
Flow chart 2.5 marks

Q.3 i. Definition of character constant and string constant. **2**

ii. Definition of scope and lifetime of a variable 2 marks **8**
Storage classes 6 marks

OR iii. Type Declaration Instruction Definition 2 marks **8**
Long, Short, Signed and unsigned 6 marks

Q.4 i. Definition 1 mark **4**
Example 3 marks

ii. Requirement of loop 2 marks **6**
Compare various loops 4 marks

OR iii. (a) if 2 marks **6**
(b) if-else 2 marks
(c) goto 2 marks

Q.5 i. Definition & example/ syntax 2 marks **4**
Memory map 2 marks

ii. Input 2 marks **6**
Logic 2 marks
Output 2 marks

OR iii. Definition & example/ syntax 2 marks **6**
String functions 4 marks

Q.6 Attempt any two:

i. Structure definition & example/ syntax 2 marks **5**
String functions 3 marks

ii. Pre-processor definition 1 mark **5**
forms of #include 4 marks

iii. Union Definition 1 mark **5**
Difference 2 marks
Example 2 marks

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