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

Enrollment No.....

Faculty of Science

End Sem (Odd) Examination Dec-2017

CA3CO01 Problem Solving and Programming

Programme: BCA Branch/Specialisation: Computer Application

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. What is the second step in problem solving process is: **1**

(a) Practicing solution (b) Organizing data

(c) Design a solution (d) Define a problem

ii. Translator for low level programming language were termed as: **1**

(a) Assembler (b) Compiler (c) Linker (d) Loader

iii. Which operators are used to compare the values of operands to produce logical values in C language: **1**

(a) Logical Operators (b) Relational Operators

(c) Assignment Operators (d) None of these

iv. A name having few letters, numbers, and special character _(underscore) is called as: **1**

(a) Keywords (b) Identifiers (c) Data types (d) Tokens

v. In C, if you pass an array as an argument to a function, what actually gets passed: **1**

(a) Value of elements in array

(b) First element of the array

(c) Base address of the array

(d) Address of the last element of array

vi. The keyword used to transfer control from a function back to the calling function is: **1**

(a) Switch (b) Go to (c) Go back (d) Return

P.T.O.

vii. Which of the following operation is illegal in structures: **1**
(a) Typecasting of structure
(b) Pointer to a variable of same structure
(c) Dynamic allocation of memory for structure
(d) All of the mentioned

viii. Size of a union is determined by size of the: **1**
(a) First member in the union
(b) Last member in the union
(c) Biggest member in the union
(d) Sum of the sizes of all members

ix. Comment on the following pointer declaration: int *ptr, p; **1**
(a) ptr is a pointer to integer, p is not
(b) ptr and p, both are pointers to integer
(c) ptr is a pointer to integer, p may or may not be
(d) ptr and p both are not pointers to integer

x. If there is any error while opening a file, fopen will return: **1**
(a) Nothing (b) EOF
(c) NULL (d) Depends on compiler

Q.2 i. What are the basic steps involved in problem solving? **2**

ii. Write an algorithm to check whether given integer value is PRIME or NOT. Also draw the flow chart of the same **3**

iii. Explain the functions Compilers and Interpreters. What is the difference between Linkers and Loaders? **5**

OR iv. What is Top-Down design? What are its goals? Explains the stages of Top-Down Design. **5**

Q.3 i. How many types of operators we have in C language? What is operator's precedence and associativity? **2**

ii. Write a program in C to print all prime numbers from to 1 to 100. **8**

OR iii. Write a program in C program to print nth Fibonacci number. **8**

Q.4 i. What is the concept of array? How many types of array we have in C language, explain with examples. **3**

ii. What are Strings? Explain the basic C functions used in String handling. Write a C program to accept a string from the user and display the frequency of the occurrence of the each member of the string. **7**

OR iii. Explain the concept of Recursion in function. Write a C program for binary searching using recursion. **7**

Q.5 i. What is a Structure in C language? How it is different from Array. How to access Structure elements explain it with example. **4**

ii. Define Union in C, what are its uses. How to declare Union, initialize the members of the Union and access the members of the Union, explain with example. **6**

OR iii. Write a C program to define a structure called 'time_struct' containing three members hours, minute and second. Assign the values to the members of the structure and display the time in the following form: '16:40:51' **6**

Q.6 Attempt any two:

i. What are Pointer variables, how it is different from the normal variables? Explain Pointer variable declaration. Write a C program to Swap values of two variable using pointers. **5**

ii. What is memory allocation, how many types we can allocate memory in C language and how? **5**

iii. What is file handling? Explain the methods of Read-Write operation with the file using C language. **5**

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Marking Scheme

Q.1	i.	(c) Design a solution	**1**
	ii.	(a) Assembler	**1**
	iii.	(b) Relational Operators	**1**
	iv.	(b) Identifiers	**1**
	v.	(c) Base address of the array	**1**
	vi.	(d) Return	**1**
	vii.	(a) Typecasting of structure	**1**
	viii.	(c) Biggest member in the union	**1**
	ix.	(a) ptr is a pointer to integer, p is not	**1**
	x.	(c) NULL	**1**
Q.2	i.	4 steps in problem solving (0.5 marks * 4 = 2 marks)	**2**
	ii.	Algorithm - 2 marks Flow chart - 1 mark	**3**
	iii.	Compilers and Interpreters – 3 marks Difference between Linkers and Loaders- 2 marks	**5**
OR	iv.	Top-Down design – 1 mark Its goals – 2 marks Stages of Top-Down Design – 2 marks	**5**
Q.3	i.	Types of operators - 0.5 marks Operator's precedence and associativity – 1.5 marks	**2**
	ii.	Input – 2 marks Output – 1 mark Logic – 5 marks	**8**
OR	iii.	Input – 2 marks Output – 1 mark Logic – 5 marks	**8**
Q.4	i.	Concept of array – 1 mark Types of array – 2 marks	**3**
	ii.	Strings – 1 mark Functions used in String handling – 3 marks	**7**
		C program – 3 marks	
OR	iii.	Concept of Recursion in function – 2 marks Input – 1 marks Output – 1 mark Logic – 3 marks	**7**
Q.5	i.	Structure in C language – 1 mark Difference from Array – 1 mark Structure elements – 2 marks	**4**
	ii.	Union in C – 1 mark Its uses – 2 marks Union initialized – 3 marks	**6**
OR	iii.	Structure definition – 2 marks Struct variable creation – 1 mark Initializing the number variables – 2 marks Accessing members of struct – 1 mark	**6**
Q.6		Attempt any two:	
	i.	Pointer variables – 1 mark Different from the normal variables – 1 mark Pointer variable declaration – 1 mark C program – 2 marks (1 for input + Output & 1 for logic)	**5**
	ii.	Memory allocation – 1 mark Types we can allocate – 2 marks How to allocate – 2 marks	**5**
	iii.	File handling – 2 marks Methods of Read-Write operation – 3 marks	**5**

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