Reg. No. : | | | | | | | | | | | | |

Question Paper Code : S1353

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2016.

First Semester

DMC 7102 — PROBLEM SOLVING AND PROGRAMMING

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is problem definition phase?

2. List the requirements for solving problems by computer.

3. What is the role of semicolon in a C program?

4. Write the various format codes in scanf( ) function.

5. How does expression statement differ from a compound statement?

6. Suppose function f1 calls function f2. Does order of function definition make any difference?

7. List any two common pointer mistakes in C while using pointer in C programming.

8. Define Enumeration constants.

9. What will be the output of the program?

```
#include<stdio.h>
#define MAN(x, y) ((x)>(y))? (x):(y);
int main()
{
    int i=10, j=5, k=0;
    k = MAN(++i, j++);
    printf("%d, %d, %d\n", i, j, k);
    return 0;
}
```

10. Define symbolic constants.

PART B — (5 × 16 = 80 marks)

11. (a) Write short notes on :

(i) Redundant computation (4)

(ii) Referencing array elements (4)

(iii) Order notation (4)

(iv) Program testing. (4)

Or

(b) Discuss in detail about stepwise refinement with suitable example. (16)

12. (a) (i) Write an algorithm and draw a flowchart to find the biggest of 'N' Numbers. (8)

(ii) Discuss in detail about the various assignment operation and increment, decrement operator with suitable program. (8)

Or

(b) (i) Write a structure of C programming and explain. (8)

(ii) Apply C Program to generate the pay slip of an employee using dangling if-else statement. (8)

13. (a) (i) Discuss the syntactic rules to be followed while using go to statement? Are there any restrictions that apply where control can be transferred in a C program? Why the use of go to statement is discourged? Explain with example. (8)

(ii) Write a program to check whether a 3 * 3 matrix is symmetric or not. (8)

Or

(b) (i) Describe the situation when Switch statement should be used. Describe the syntactic rules of using a Switch Statement. (8)

(ii) Write a C program to calculate the standard deviation and mean of an array of values. The array elements are read from the terminal. Use functions to calculate standard deviations and mean. (8)

14. (a) (i) Write a program in C to concatenate two strings without using strcat( ) function. (8)

(ii) Analyze the various bit wise operators used in C program with suitable example. (8)

Or

(b) (i) Using the concept of structures, write a program in C to display the salary, department and other details of employees of an organization. Make necessary assumptions wherever necessary. (8)

(ii) What is call by value and call by reference, explain with suitable example? (8)

15. (a) (i) Compare various preprocessor operations with suitable example. (8)

(ii) List the possible errors which occur during I/O operations on a file. Write a program to illustrate error handling in file operation. (8)

Or

(b) (i) Write a C Program to read last n characters from the file. (8)

(ii) Discuss in detail about random access files with suitable example. (8)

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Question Paper Code : 80353

M.C.A. DEGREE EXAMINATION, AUGUST 2015.

First Semester

DMC 7102 — PROBLEM SOLVING AND PROGRAMMING

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. "Problem solving need algorithm" Justify.

2. How the efficiency of an algorithm measured?

3. Write short notes on basic data types in C language.

4. Distinguish between pre-increment and post-increment operator when used in an assignment statement.

5. What is a recursive function?

6. What is an exit controlled loop? Give an example.

7. What is a pointer?

8. Write a note on enumeration constants.

9. Compare sequential and random access file.

10. What is a preprocessor?

PART B — (5 × 16 = 80 marks)

11. (a) Discuss in detail various methods in problem solving. (16)

Or

(b) Discuss in detail about how an algorithm is analyzed for time and space complexities. (16)

12. (a) Discuss in detail various structures of 'if' and 'if..else' with suitable examples and flow charts. (16)

Or

(b) Discuss in detail about the various operators in C language. (16)

13. (a) (i) Write a "C" program to find the sum of the digits of a number. (8)

(ii) Write a "C" program to generate 'n' Fibonacci numbers. (8)

Or

(b) (i) Write a recursive function to find the factorial of a number. (8)

(ii) Explain with an example about call by value and call by reference. (8)

14. (a) Explain the relationship between an array and a pointer. Write a program to find the biggest and smallest element in an array using pointers. (16)

Or

(b) Define a structure that can describe a student. It should contain members that include name, date of birth, and marks for three subjects. Write a program to read the data in for 5 students and calculate the average for every student and display the details. (16)

15. (a) Discuss about macros and conditional compilation in C. (16)

Or

(b) Write a program to generate a data file containing the list of customers and their telephone numbers. Write functions to find the telephone number of a given customer and to find the customer details if the telephone number is specified. (16)

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Question Paper Code : 22355

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2015.

First Semester

DMC 7102 — PROBLEM SOLVING AND PROGRAMMING

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Explain the purpose of documentation.

2. Give the importance of time complexity.

3. Write the algorithm for swapping the values of two variables without intermediate variable.

4. What are the relational and logical operators in C?

5. Define recursion.

6. Give the syntax of switch .. case statement.

7. Write a C program to print numbers which are not divisible by 3.

8. What is the purpose of preprocessor?

9. Give any two string handling functions.

10. Define STRUCTURE in C.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain about Top-Down design in detail.

(ii) Discuss about different steps involved in the analysis of algorithm.

Or

(b) (i) Explain about different control structures

(ii) Explain in detail about implementation sorting using any algorithm of your choice.

12. (a) (i) Write a program to find the second Max in an array.

(ii) Draw a flowchart to find the given number is prime number or not.

Or

(b) Write short note on :

(i) Procedural programming

(ii) Structured programming.

13. (a) Write a program

(i) Calculate the factorial of a number using recursion. (6)

(ii) To find the sum of the series 1, 3, 5, 7...n–1. (6)

(iii) Explain the decision making statements in C. (4)

Or

(b) Explain the syntax and purpose of fgets() and fputs() functions. Write example programs to illustrate.

14. (a) Explain about various storage classes in C with example.

Or

(b) Explain with examples

(i) Pointer Array

(ii) Structure with pointers.

15. (a) (i) Define Preprocessors and its directives. (6)

(ii) How do you pass command line arguments? Explain with illustration. (10)

Or

(b) Explain about the INPUT – OUTPUT operations in Files using C with example.

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Question Paper Code : 46352

M.C.A. DEGREE EXAMINATION, AUGUST 2014.

First Semester

DMC 7102 — PROBLEM SOLVING AND PROGRAMMING

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw the binary decision tree for a set of 15 elements.

2. List the important qualities of good algorithms.

3. Evaluate the following expressions and show their hierarchy
   g = big / 2 + big * 4 / big – big + abc / 3;
   (abc = 2.5, big = 2, assume g to be a float)

4. How does a programmer finds coding errors?

5. Distinguish structure data type with other data type variables.

6. How are the data elements initialized in the case of static type variable?

7. What is the advantage of UNION in C?

8. What is the difference between the array of pointer and pointer to the array?

9. Give any two features of preprocessor.

10. The value of a macro name cannot be changed during the running of a program. Comment.

PART B — (5 × 16 = 80 marks)

11. (a) Discuss in details about top down design with suitable example. (16)

Or

(b) Discuss the various concepts of computer problem solving aspect with a suitable example.

12. (a) (i) If a four-digit number is input through the keyboard, write a C program to obtain the sum of the first and last digit of this number. (8)

(ii) Discuss in brief structure of C programming. (8)

Or

(b) (i) A five-digit number is entered through the keyboard. Write a program to obtain the reversed number and to determine whether the original and reversed numbers are equal or not. (8)

(ii) What is data type explain the any four data types used in C language with suitable example? (8)

13. (a) (i) Write a C language program to enter n elements in array and find second largest number from array. (8)

(ii) Give the selection process of the switch statement and explain switch case statement with syntax. (8)

Or

(b) (i) Write a C program to check if given number is present in an array or not. (8)

(ii) Discuss the various Storage classes in C with suitable example. (8)

14. (a) Explain any eight string handling functions with suitable example and write C program to find the string length without using string function. (16)

Or

(b) Discuss the three different approaches that can be used to pass structures as function arguments with example. (16)

15. (a) When a program is terminated; all the files used by it are automatically closed. Why is it then necessary to close a file during execution of the program? Discuss. (16)

Or

(b) Assume that a master file contains two fields, Roll number and name of the student. At the end of the year, a set of students join the class and another set leaves. A transaction file contains the roll numbers and an appropriate code to add or delete a student. Write a program to create another file that contains the updated list of names and roll numbers. Assume that the Master file and Transaction file are arranged in ascending order by roll numbers. The updated file should also be in ascending order by roll number. (16)