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63 (FY)SEM-2/SEC2/MATSEC1023

2024

MATHEMATICS

Paper : MATSEC1023

(Programming in C)

Full Marks : 40

Pass Marks : 16

Time : Two hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer : $1 \times 5 = 5$
- (a) The term for a character array which is used to store text in C is
- (i) char array
 - (ii) text array
 - (iii) string
 - (iv) char sequence
- (b) If a is an integer variable, then $a = \frac{5}{2}$ will return value
- (i) 5
 - (ii) 2
 - (iii) 0
 - (iv) 1

Contd.

- (c) The format of the data type 'int' is
- (i) % c
 - (ii) % f
 - (iii) % d
 - (iv) % e
- (d) The C function of the mathematical notation $\text{pow}(y, x)$ is
- (i) x^y
 - (ii) y^x
 - (iii) yx
 - (iv) xy
- (e) A function's return type in C if it does not return any value is
- (i) void
 - (ii) float
 - (iii) char
 - (iv) int

2. Answer the following questions : **(any five)**
2×5=10

- (a) What is the purpose of scanf () function? How is it used within a C program?
- (b) What is meant by prototyping? Give an example of it.

- (c) Discuss the difference between 'assignment' and 'equality'.
- (d) How does $x++$ differ from $++x$?
- (e) What relationship must be maintained between actual arguments and formal arguments?
- (f) What are the types of formatted input and output functions used in C?
- (g) How is an array of 10 integers declared and used in C?

3. Answer the following questions : **(any three)**
5×3=15

- (a) Summarize the syntactic rules associated with the 'for' statement in C language. Can *any* of the three expressions in the 'for' statement be omitted? If so, what are the consequences of each omission?

$$2+1+2=5$$

- (b) What is the purpose of 'switch' statement? When the braces {} can be omitted? Give the general form of 'switch' statement.

$$1+1+3=5$$

- (c) What is flowchart? Write the algorithm and draw the flowchart to find the sum and product of given two numbers.

$$1+4=5$$

(d) What is needed for the header file `#include<stdio.h>` in C? Write a C program to find biggest of two numbers by considering only 'if' statement.

$$1+4=5$$

(e) What happens if the condition in a 'while' loop is initially false? What are the *three* expressions used in 'while' loop? Discuss the use of break, continue and exit () function.

$$1+1+3=5$$

4. Answer the following questions : (*any one*)

$$10 \times 1 = 10$$

(a) Discuss the syntax of an array in C. Write a C program to find the trace of a given square matrix of order $m \times n$ using array. Also write the output of the program.

$$3+5+2=10$$

(b) What is meant by recursive function? How is it used in a C program? Write a recursive function to display the first n terms of the Fibonacci series.

$$1+3+6=10$$