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3 (Sem-6) MAT M 3

2020

MATHEMATICS

(Major)

Paper : 6·3

(Computer Programming in C)

Full Marks : 40

Time : Two hours

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

1. Answer **any six** questions : $1 \times 6 = 6$
- (a) What is a source program ?
 - (b) What is an algorithm ?
 - (c) What is meant by 'machine level language' ?

Contd.

- (d) State True **or** False :
"C is a case sensitive language."
- (e) $i += 1$ can also be written as _____.
(Fill in the blank)
- (f) Which header file has to be included to use `getch ()` ?
- (g) The _____ statement is used to transfer the control to the beginning of the loop.
(Fill in the blank)
- (h) Give an example of a volatile memory.

2. Answer **any two** questions : $2 \times 2 = 4$

- (a) Write the following mathematical expression in C language :

$$e^{x+y} - \sin\left(\sqrt{|x+ny|}\right) + \log 2a$$

- (b) What is an array variable? How does it differ from an ordinary variable?
- (c) What are library functions? Mention **any two** library functions of C available in `math.h`.
- (d) Discuss the difference between assignment and equality with examples.

3. Answer **any two** of the following :

5×2=10

- (a) What is a variable ? How is it declared ? What are the basic datatypes ? How does the type float differ from double in C language.
- (b) Write a C program to add 3×3 matrices.
- (c) Explain the utility of break and continue statement with the help of suitable examples.

4. Answer **any two** of the following :

5×2=10

- (a) What is meant by a recursive function or recursion ? Using a recursive function, write a C program for computing the value of x^n for given values of x and n .
- (b) Discuss the following operators with examples :
 - (i) Relational operator
 - (ii) Logical operator
 - (iii) Ternary operator.

- (c) Give the general syntax of the if-else statement. Use it to write a C program to find the largest of three given numbers.

5. Answer **any two** questions :

- (a) Explain briefly what is meant by 'call by value' and 'call by reference' of a function. 5
- (b) Give the general form of 'for loop' in C. Explain how it works with the help of a suitable example. 5

OR

Give the general form of a function declaration. How is a function called? What are actual and formal arguments? 2+1+2=5

- (c) Write a C program to sort a set of 10 given numbers in ascending order. 5

OR

Write a C program to find the roots of the quadratic equation $ax^2 + bx + c = 0$ for given a, b, c .