

2016

MATHEMATICS

( Major )

Paper : 6.3

( Computer Programming in C )

Full Marks : 40

Time : 2 hours

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

1. Answer as directed (any six) :

1×6=6

- (a) What is the utility of a compiler?
- (b) What is meant by a source program?
- (c) Mention any two operating systems commonly used.
- (d) Give an example of volatile memory.
- (e) Mention the main hardware components of a computer.

- (f) What is meant by an application software?
- (g) What is an algorithm?
- (h) State True or False :  
C is a case-sensitive language.

2. Answer any *four* questions : 1×4=4

- (a) What is meant by an identifier?
- (b) Mention four reserved words used in C.
- (c) Mention four basic data types used in C.
- (d) What are relational operators? Give two examples.
- (e) Write the following mathematical equation in C expression :

$$\sin\left(\frac{y}{\sqrt{x^2 + y^2}}\right)$$

- (f) What is the utility of a size of operator?

3. Answer any *two* parts : 5×2=10

- (a) Write the general form of nested if-else statement. Use it in a program which can be used to find the biggest of 3 given distinct integers.

- (b) Give the general syntax of switch statement and explain in detail how it works with the help of a program segment.
- (c) Write a C program to check whether a given number is a prime number.

4. Answer any *two* parts : 5×2=10

- (a) What is an array variable? How does it differ from an ordinary variable? Explain how you can declare, initialize and use an array of 10 integers.
- (b) Write a program in C to find the multiplication of two 3×3 given matrices.
- (c) Write a C program to find the sum of two values using pointer. Also explain how pointers differ from an ordinary variable.

5. Answer any *two* parts : 5×2=10

- (a) Write a function to find the factorial of a given integer and use it to find the value of  ${}^n C_r$ , where

$${}^n C_r = \frac{n!}{r!(n-r)!}$$

- (b) What is meant by a recursive function?  
Write a recursive function for computing  
the value of  $x^n$  for given values of  $x$  and  $n$ .
- (c) Write short notes on (any two) :
- (i) Auto-storage class
  - (ii) Static storage class
  - (iii) Extern storage class

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