

First Semester Examination, 2003

Programming in 'C'

Full Marks : 70

Time : 3 hours

Answer any six questions including Q. No. 1
which is compulsory

The figures in the right-hand margin indicate marks

1. Answer the following questions : 2 × 10

(a) What is meant by hamming distance ?

(b) Explain the difference between compiler
and interpreter.

(c) What is the purpose of malloc function ?
When is it necessary to call this function ?

(d) What happens when an integer is added to
a pointer ?

(e) In what way is a file more flexible than a
string ?

(f) Evaluate the following binary expression :

$$10001010 + 01001111 - 10011100$$

(Turn Over)

- (g) What is the difference between source code, object code and executable code?
- (h) What will be the output of the following program?

```

void cube (int *a)
{
    a = (*a) * (*a) * (*a);
    printf ("%d", *a);
}
20
main ()
{
    a = 20;
    cube (&a);
    printf ("%d", a);
}
3000

```

- (i) What are the different storage classes available in C?
- (j) Following is a part of a program. Find the invalid operations:

```

int a [10], *b;
a = b;
b = a;
a++; ✓
b++; ✓
b [10] = 20; ✓
*b = 20;

```

2. (a) Simplify:
 $(101)_2 \times (1110)_2 + (101100)_2 \div (100)_2 + (11111)_2 - (11101)_2$ 5
- (b) Explain different data types in C with examples. 5
3. (a) What is meant by Control Structures? Explain briefly with examples of iterative statements in C. 5
- (b) In a College election two candidates X and Y are contesting for the post of President. Write a program to count the number of votes secured by each candidate and print the same. The program should ask for the number of voters first and then accept votes for each voter. At the end, the program should print the winning candidate. 5
4. (a) What are the advantages and disadvantages of a recursive algorithm? 3
- (b) Write a recursive function to solve the tower of hanoi problem. Your program should consist of two functions—main() and hanoi(). The main program should accept from the user 'n' number of disks. Then it should call the hanoi function to solve the problem. 7

5. Write a program to test if a string is a Palindrome. A Palindrome is a word or a phrase or a sentence that reads the same backward and forward. Example : "not so boston", "steps on no pets".

Your program should consist of two functions, main() and ispalindrome(). One function main should read a string from the user and call function ispalindrome to test if it is a palindrome. 10

6. Write a program in C to handle dates. The program should have following features :

- (a) Structure date to solve dates
- (b) A function read dates to accept data input from user and store that into a date variable
- (c) A function print date to print a date variable
- (d) A function compare two dates and

```
return 1, if date1 > date2
       0, if date1 = date2,
      -1, if date1 < date2.
```

The main function should call the above functions to test two date variables input by user. 10

7. (a) What is a pointer variable ? What are its features ? Explain with examples pointer to an array, pointer to a pointer and pointer to a string. 5
- (b) Write a program to read two strings from the user. Compare the two strings character by character. Display the similar character found in the strings and count the number of dissimilar characters. 5
8. (a) What is a file ? Write the steps involved in creating a new file. 5
- (b) Write a program to open a file and add your address at the end of the file. Print the file after appending. 5