

[This question paper contains 4 printed pages.]

4698

Your Roll No.

B.Sc./I/NS

AS

COMPUTER SCIENCE – Paper I

(Programming Fundamentals & Data Structures)

(Admissions of 1999 and onwards)

Time : 3 Hours

Maximum Marks : 38

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

*All questions are compulsory. Parts of
a question must be answered together.*

1. (a) For given declaration `int a[10];`

What are `&a` and `*a`? (1)

(b) Differentiate an auto and external storage class. (2)

(c) Convert the following “for” loop to a “while” loop.

`for(i=10;i>0;i--)`

`printf(“%d”,i*i);` (1)

(d) Differentiate between Syntax error and Logical error. (2)

P.T.O.

- (e) Giving examples explain the difference between a Union and a structure ? (2)

2. (a) Following is the program segment to compute the sum of given 10 numbers. Find the logical error(s) if any.

```
n=0; sum=0;
while(n<10)
{
    scanf("%d", &num);
    sum=sum+num;
}
```

 (2)

- (b) What is the output of the following program segment ?

```
for(i=0;i<2;i++)
for(j=0;j<2;j++)
{ if(i==j)
    continue;
printf("%d %d", i,j);
printf("\n");
}
```

 (2)

- (c) Write a nested loop to print the following pattern

```
1
2 3
4 5 6
7 8 9 10
```

 (2)

3. (a) Write a function to compare two strings without using **strcmp** function. (3)
- (b) Write a program which reads a line of text and stores each character in upper case in a text file. (3)
- (c) Write a recursive function to print the sum of first n natural numbers. (2)
4. (a) Define LIFO and FIFO lists ? Give one application of each. (2)
- (b) Give the declaration of a node to create single link list which can store Employee code, employee name and date of birth(dd/mm/yyyy) of the employee. (2)
- (c) Give advantages and disadvantages of a doubly link over a single list. (2)
- (d) Write a function to append a singly linked list at the end of another singly linked list. (2)
5. (a) Sort the following numbers in ascending order using bubble sort. Show the list after each pass.
21, 18, 52, 14, ~~2~~, 7 (3)

- (b) Evaluate the following prefix expression. Show all the steps.

$$* - 6 2 + 3 4 \quad (2)$$

- (c) Create a Binary Search Tree for the following values. Also show the sequence of the nodes in which they are visited in Preorder and Postorder traversal.

$$26, 18, 9, 58, 29, 7 \text{ and } 35 \quad (3)$$