B. TECH.

SECOND SEMESTER EXAMINATION, 2001-2002

COMPUTER & LANGUAGES

Time : Two Hours   *Total Marks : 50*

Note : Attempt ALL the questions.

1.   Attempt any FOUR of the following :—   (3×4=12)

(*a*)   What is a general purpose machine? Explain Von Neumann machine's features.

(*b*)   What are differences in

(*i*)   Static versus Dynamic memories,

(*ii*)   Volatile versus Non-Volatile memory,

(*iii*) RAM and ROM ?

(*c*)   Find out the average access time for a fixed head disk rotating at 3000 rpm and contains 10 sectors in a track.

(*d*)   What is a device controller ?

(*e*)   State whether the following are True or False :—

(*i*)   Cache memory increases load on main memory.

(*ii*) The principle of locality says that all the references to data have to be to the same memory location.

(*iii*) Memory hierarchy is built in computer system as the main memory cannot store very large data.

(*iv*) An interrupt may be generated by a clock. This is known as a timer interrupt.

(*v*) In case multiple interrupts occur at the same time, then only one of the interrupts will be acknowledged and rest will be lost.

(*f*) What is a file manager in windows? Explain the purpose for what the following commands are used :

(*i*) File Menu → Copy Command.

(*ii*) View Menu → Split Command.

(*iii*) View Menu → Select Drive Command.

2. Answer any FOUR of the following :— (3×4=12)

(*a*) Write the UNIX equivalent of the following DOS commands :—

DIR DEL COPY TYPE CD MD RD REN

(*b*) What will be the effect of following UNIX commands?

umask

chmod 777 abc.c

chmod ug+rw a=x ff.out

chmod u+t mydir

(*c*) In vi editor, what is the purpose of .exc file? What is the difference between yank and delete ?

(*d*) How do PINE and ELM compare with other mail programs under UNIX and WINDOWS ?

(e) Write short notes on any *three* of the following :—
  (*i*) SMTP
  (*ii*) POP
  (*iii*) MIME
  (*iv*) UUCP

(*f*) Explain the following terms :—
  (*i*) Search Engines
  (*ii*) URL
  (*iii*) Browsing

3. Attempt any TWO of the following :— (6.5×2=13)

(*a*) Explain the following in 'C' Language :—

  (*i*) What are 4 relational and two logical operators ?

  (*ii*) What are the 6 bitwise operators ?

  (*iii*) What is ternary operator ?

  (*iv*) Give the precedence and associativity of the operators : && → * & + =

(*b*) (*i*) What will be the output of the following program ?

```
main ( )
{
    int i = 4, j = -1, k = 0, w, x, y, z;
    w = i || j || k;
    x = i & & j & & k;
    y = i || j & & k;
    z = (i > 3 ? k : i*4);
    printf (w, x, y, z);
}
```

(*ii*) Discuss modular programming, structured programming and object oriented programming techniques.

(*c*) (*i*) What are the differences between a compiler and an interpreter ?

(*ii*) Distinguish between the following :—

(1) Actual and formal arguments

(2) Global and local variables

(3) Automatic, static and extern variables

(*iii*) State the fundamental (basic) data types and their sizes used in 'C' language.

4. Attempt any TWO of the following questions :—

(6.5×2=13)

(*a*) (*i*) State whether True or False :—

(1) All structure elements are stored in contiguous memory locations.

(2) Address of a floating point variable is always a whole number.

(3) The array int num[26] has twenty-six elements.

(4) The expression num[1] designates the first element in the array.

(*ii*) Creat a structure to specify data on students given below :—

Roll number, Name, Department, Course, Year of joining

Assume that there are not more than 450 students.

Write a function to print names of all students who joined in a particular year.

(b) (i) What will be the output of the following program?

```
main ( )
{
    int a[5]={5,1,15,20,25};
    int i,j,k=1,m;
    i=++a[1];
    j=a[1]++;
    m=a[i++];
    printf(i, j,m);
}
```

(ii) What is the relationship between the data item represented by a variable v and the corresponding pointer variable pv?

(c) (i) What do you understand by pointer arithmetic ? Explain.

(ii) Write a function that swap (exchanges the value of) two integers. Write the main function and make the call to swap ( ) function on the arguments taken through command line arguments.

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