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No. of Printed Pages—5

CS-201

B. TECH.

SECOND SEMESTER EXAMINATION, 2003–2004

COMPUTER & LANGUAGES

Time : 2 Hours

Total Marks : 50

Note : Attempt ALL the questions.

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

- (a) What is the purpose of command interpreter ?
Why is it usually separate from the kernel ?
- (b) What are differences in :
 - (i) Compiler and Interpreter,
 - (ii) Static and dynamic RAM,
 - (iii) Single user and Multi user operating systems ?
- (c) Swapping helps in increasing the degree of multiprogramming. Justify this statement.
- (d) State the role of following in context to DOS :—
 - (i) AUTOEXEC.BAT
 - (ii) CONFIG. SYS
 - (iii) FAT
- (e) Write DOS commands for the following operations :—
 - (i) To copy a portion of directory tree structure with root "abc" from hard disk to floppy.
 - (ii) To list the files and subdirectories of the current directory in ascending order (alphabetic) of their names.

- (iii) To delete a directory without explicitly deleting its contents.
 - (iv) To send a file abc.c for printing.
 - (v) To make the files of current directory read-only.
- (f) What is desktop ? What are the important icons present on your desktop ? State the purpose of each of them.

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

- (a) Write UNIX commands to perform the following :—
- (i) To list current directory's files and subdirectories width-wise.
 - (ii) To set reading and execution permissions for group members and others for file "abc.c".
 - (iii) To view a file page by page.
 - (iv) To rename file 1 as file 2.
 - (v) To count the number of words present in a text file.
- (b) Give any two commands which can change the *vi* editor's mode from escape to insert. How can you perform cut-paste and copy-paste operations in *vi* ?
- (c) What is e-mail ? How is it sent ? Explain the composition of any e-mail address.
- (d) Write short notes on any *three* of the following :—
- (i) MIME
 - (ii) ELM
 - (iii) Web Browser
 - (iv) www

- (e) Discuss the hardware/software requirements and other formalities to be completed to get internet connectivity on home PC.
- (f) State the role of following protocols :—
- (i) TCP
 - (ii) IP
 - (iii) PPP
 - (iv) SMTP

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

- (a) Give reasons, why
- (1) all variables declared in program must not be made global,
 - (2) a large program is normally implemented as a collection of smaller functions,
 - (3) C provides a rich variety of control statements,
 - (4) all variables have to be declared before they are used in a C program.
- (b) (i) What will be the output of the following program ?

```
# include < stdio.h>
# include < ctype.h>
main ( )
{
    char c;
    while ((c = getchar ( )) != EOF)
        if (is alpha (c))
            putchar (c^32);
}
```

- (ii) What is dynamic memory allocation ? Discuss the main advantage of dynamic memory allocation over static allocation.

(c) (i) Differentiate between :

(1) `int abc [5] [10];` and `int * b [5];`

(2) `int *fn (int);` and `int (*fn) (int);`

(ii) Discuss the roles of compiler, linker and loader in a programming language.

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(iii) Write a function `int count (char *str, char c)` which accepts a string and a character as arguments and returns the total count of occurrences of character `c` in string `str` otherwise 0.

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

(a) (i) State whether true or false :

(1) The structure tag is mandatory.

(2) The "typedef" does not allocate a variable but associates an identifier with a particular data type.

(3) By default, automatic variables are initialized to zero.

(4) The number of elements required in a character array to store the string "abc\n" is 6.

(c

(ii) What is recursion ? Write a recursive function, `int sum (int n)`, that returns :

(d

$2 + 4 + 6 + \dots + 2n$

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

```
void ast (void)
```

```
{
```

```
int av = 1;
```

```
static int sv = 1;
```

```
printf ("column 1=%d column2=%d\n", av, sv);
```

```

        ++ av;
        ++ sv;
    }
    main ()
    { int d;
      for (d = 0; d < 5; ++ d )
          ast ();
    }

```

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(ii) Write a function `int arrsum (int arr [], int num)` that takes two arguments : an integer array and the number of elements in the array and returns as its output the sum of the elements in the array.

=12)

- (c) (i) Discuss different modes in which a file can be opened by giving suitable examples.
- (ii) Write a program which will perform multiplication operation on the number of arguments entered on the command line,
e.g. `c:\> rcalc 2 3 5` should return 30.

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