

**END-TERM EXAMINATION
FIRST SEMESTER [MCA] - DECEMBER 2004
PROBLEM SOLVING USING C**

Paper Code: MCA-105

**Time: 3 Hours
Marks: 60**

- Q. 1. (a) Justify that C is a structural language.
(b) What is the purpose of including comments in a program? Can it extend beyond single line?
(c) Differentiate between $K = ++I$ and $K = i++$
(d) `if(q>=r)`
`printf("q is greater than or equal to b");`
`else`
`printf("r is less than q");`
Can it be written without `if..... else` statement.
(e) What are the other forms of writing the statement `total = total -1;`
(f) What will be the output of 123.456 in the format of `%f`?
(g) Evaluate X given $y=5$ in the expression $X = (YX=2) + (X=a=4)$;
(h) A function may contain more than one RETURN statement (TRUE/FALSE).
(i) Differentiate between ARRAY and STRUCTURE.
(j) What is a Linked List?

- Q. 2. (a) Differentiate between the while STRUCTURE and do-while statement through a simple program.
(b) Explain SWITCH statement. Can it be replaced by IF statements.

- Q. 3. (a) Write the output of the following program segment

```
i=0
while(i<5)
if(i<3)
{
i +=2
printf("%d\n",i);
continue;
}
else
{
```

Note: Attempt any six questions. All question carry equal marks.

```
printf("%d\n", ==i);
break;
}
printf("WELLDONE\n");
}
```

- (b) Describe the output of the following C program.

```
#include
main()
{
int i=0, x=0;
for(i=1;i<10;i*=2)
{
x++;
printf("%d",x);
}
printf("\n x= %d",x);
}
```

(c) Describe the output of the following C program.

```
#include
main( )
{
int i,j,k,x=0;
for(i=0;i<5;++i)
for(j=0;j
{
switch(-i + j-1)
{
case -1:
case 0:
x +=1;
break;
case 1:
case 2:
case 3:
x +=2;
break;
default:
x +=3;
}
printf(“%d”,x);
}
printf(“\n x=%d”,x);
}
```

Q. 4. Write a program to find the sum of the series

$1 - x^2/2! + x^4/4! - x^6/6! +$

Correct up to 3 pieces of decimal. The output should be

For X =Sum =

Q. 5. (a) Describe the output

```
#include
main( )
int n=10
int funct1(int n);
printf(“%d”,funct1(n));
}
int funct1(int n)
{
if(n>0) return (n + funct1(n-2));
}
```

(b) Write a function called DET that calculates the determinants of order 2. use it to calculate the determinate of order3.

Q. 6. Consider the following program.

```
main( )
{
static struct item
{
char *name;
float price;
}
table[]=
{
(“pickles”,15.90),
(“soda”,2.50),
(“Campa”,5.50),
(“bread”,5.00),
(“milk”,4.60),
);
char item_name[21];
int quantity;
```

```

i;
do
{
printf("Enter Item name");
scanf("%s",item-name);
if(*item_name !='.')
{
for(i=0;i<(sizeof(table)/sizeof(struct item)&& strcmp
(table[i]. name,item_name) ; i++);
if(i
{
printf("Enter quantity :");
scanf("%d",&quantity);
printf("\n unit price = %.2f, total price = %2f. \n\n", table[i].price,
quantity* table[i].price);
}
else
printf("\n item \' %s \' "does not exist. \n\n", item_name);
}
}
while(*item_name!='.');
printf("THANK YOU.\n");
}

```

Give the output when data is

Item name Quantity

Pickles 1

Bread 2

Juice 4

Modify the above program so that at the end before THANK YOU, it should give the total cost of all the items.

Q. 7. (a) Explain the concept of STRUCTURE within STRUCTURE by taking a simple example.

Q. 8. Draw flowchart / write algorithm of any two:-

- (a) Given set of K numbers. The output should be the difference of sum of even numbers and sum of odd numbers.
- (b) Finding the square root of a given numbers
- (c) Given any number. The output should be the sum of the digits of that number.