

COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Govt. of Maharashtra)

END SEMESTER EXAMINATION

(CT 102) Fundamentals of Computer Programming

Programme:- F.Y.B.Tech (Div:- VI to X)

Year :- 2012-13

Semester :- 1

Duration:- 3 hr

Max. Marks:- 50

Instructions: Assume that sizeof(int) = 4

Assume suitable data whenever necessary.

comp

Q.1 Select the correct answer for all of the following.

[8]

i) What will be the output ?

```
#include<stdio.h>
int main () {
    char a[] = "STRING%c"; int * cp= (char*)"WORD";
    printf ( a, (char*)((++cp)-1) ); return 0; }
```

(a) STRINGW (b) Compiler Error (c) STRINGD (d) STRING

ii) What will be the output ?

```
#include<stdio.h>
#include<string.h>
int main () { printf ("%d", strlen("123456") ); return 0; }
```

(a) 6 (b) 12 (c) 7 (d) 25

iii) What will be the output ?

```
#include<stdio.h>
int main () { printf ("%c", "abcdefgh"[4] ); return 0; }
```

(a) Compiler Error (b) d (c) e (d) abcdefgh

iv) What will be the output ?

```
#include<stdio.h>
int main () { char c; printf ("%d", c='A' == '\0' ); return 0; }
```

(a) A (b) 0 (c) ASCII code of 'A' (d) ASCII code of 0

v) Let int a[5] be an array of integers. Which of the following refers to the third element of the array?

(a) *(a+2) (b) *(a+3) (c) (a+3) (d) (a+2)

vi) #include<stdio.h>

```
int main()
{ int a[5]= {2,3}; printf ("%d%d%d", a[2], a[3], a[4]); return 0; }
```

(a) garbage (b) 333 (c) 233 (d) 000

1/4

Which of the following is NOT a logical operator?

- (a) && (b) & (c) || (d) !

1) A static variable can

- (a) be initialised by symbolic or literal constant only
(b) be initialised by const qualified variable
(c) not be initialised
(d) None of above

Q.2 Give proper justifications for following questions.

[2]

(1) How many times below for loop gets executed ?

```
#include<stdio.h>
int main()
{ int i; for(; scanf("%d", &i); printf("%d", i) ); return 0; }
```

(2) Call by reference is more significant than call by value, for parameter passing of functions.

[2]

Q.3 Find the output of each of the following C programs with correct explanation.

[16]

(Any eight)

i)

```
#include<stdio.h>
int main(){ int s=0;
while(s++<10){ if(s<4&& s<9) continue; printf("\t%d",s);} return 0; }
```

ii)

```
#include<stdio.h>
#include<malloc.h>
int main()
{ struct x{
    int data; struct x * ptr;} ;
  struct x *p, *q ;
  p= (struct x *) malloc( sizeof(struct x) );
  q= (struct x *) malloc( sizeof(struct x) );
  printf("%u %u", sizeof(p), sizeof(q) );
  return 0; }
```

iii)

```
#include<stdio.h>
int main(){
int i=0;
while(++i!=0)
    i -= i++;
printf("%d",i); return 0; }
```

iv)

```
#include<stdio.h>
void fun(int x)
{
  if(x > 0)
  { fun(--x);
    printf("%d\t", x);
    fun(--x);}
```

```

}
int main()
{int a = 5;
  fun(a);, return 0;}

```

v) `#include<stdio.h>`
`void visit();`
`main(){`
 `int i=0;`
 `{ static int a=5;`

```

XYZ:
  printf("%d ",a);
  a++;
  i++;}
visit();
if(i<5)
  goto XYZ;}

```

```

void visit(){
}

```

vi) `#include<stdio.h>`
`int fun(int i)`
`{ if(i%2)`
 `return i++;`
`else return fun(fun(i-1));}`
`int main()`
`{printf("%d", fun(197));`
`return 0;}`

vii) `# include<stdio.h>`
`int main(){`
 `int n= -13 ;`
 `if((n & 0x80000000) && 1)`
 `printf("YES");`
 `else printf("NO");`
`return 0; }`

viii) `# include<stdio.h>`
`int main(){`
 `int i=0, s=0;`
 `while(i++ < 16)`
 `s= s+ printf("%d-", i);`
 `printf("%d", s); return 0; }`

ix) `# include<stdio.h>`
`int main(){`
 `char str[]="aBrAcAdAbRA" ;`
 `while(*str)`
 `if((*str >= 97) && (*str <= 122))`
 `{ *str= *str-32; str++; }`
`return 0; }`

Answer the following questions (any three)

[6]

Are the following expressions same where ptr is a pointer ?

```
*ptr++;  
++*ptr;
```

- ii) Explain different scopes of variables.
- iii) What do the following declarations signify?
(A) char ** a; (B) int * f(); (c) int (*ptr)[50]; (D) const char * const a;
- iv) Explain use of malloc, calloc, realloc, free functions.
- v) Why C++ is called object-oriented language?

Q.5 Write a complete executable C language program for following.

i) Write a C program to print below given pattern.

[4]

```
* * * * *  
* * * *  
* * *  
* *  
*  
* *  
* * *  
* * * *  
* * * * *
```

ii) A file named DATA contains a series of integer numbers .Code a program to read these numbers from file and then write all odd numbers to a file to be called ODD and all even numbers to a file to be called EVEN

[4]

iii) Write a program to accept an unsigned integer N and print "EVEN" if N is even or print "ODD" if N is odd, without using relational operator, ternary conditional operator, if-else statement, switch statement.

[4]

OR

An integer array of size 100 contains all integers from 1 to 99 with one integer duplicated. Write a C program to find the duplicate integer. You are not allowed to traverse the array more than once.

iv) Write an executable C program to reverse a singly linked list without reversing the pointers. Structure of the node and header of the list is as below.

[4]

```
struct node  
{ int data; struct node * next; } * header;
```