B. E. First Semester (All)/SoE – 2018-19 Examination

Course Code : IT 2101 **Course Name : Introduction to Computer Programming**

Time : 3 Hours] [Max. Marks : 60

Instructions to Candidates :—

(1) All questions are compulsory.
(2) All questions carry marks as indicated.

1. (A) Solve any **One** (A1 or A2) :

(A1) Write an algorithm and draw a flowchart to find the largest number among three different numbers entered by user.

(A2) Write an algorithm and draw a flowchart for swapping of two variables without using third variable. 4

(B) Solve any **One** (B1 OR B2) :

(B1) Differentiate between :

(a) System software and Application software.

(b) Syntax error and Semantic error.

(B2) Differentiate between :

(a) RAM and ROM

(b) Hardware and Software. 4

(C) Solve any **One** :

(C1) What is Utility software ?

(C2) What do you understand by memory hierarchy ? Name the general classes of storage media that might make up a memory hierarchy. 2

2. (A) Solve any **One** :

(A1) Write a program to convert a given number of days to a measure of time given in years, weeks and days. (For example 375 days equals 1 year, 1 week and 3 days.)

(A2) Write a program to test the given integer number is odd or even using bit-wise operator. 4

(B) Solve any **One** :

(B1) Write a menu driven C program to enter month number between (1-12) and print the number of days in month. (using Switch).

(B2) Write a C program to enter marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and display grade according to following rules :

Percentage > 90% : Grade A
Percentage > 80% and < = 90 : Grade B
Percentage > 70% and < = 80 : Grade C
Percentage > 60% and < = 70 : Grade D
Percentage > 40% and < = 60 : Grade E
else Grade F 4

(C) Solve any **One** :

(C1) What will be the output of the following program code :

```
   int main()
{  int i = – 2, j = –1, k = 0, 1 = 2, m, n;
    n = ++i&&++j;
   m = i++&&j++&&k++||%d",++;
    printf("%d %d %d %d %d", i,j,k,l,m,n);
    return 0;
}
```

(C2) What will be the output of following program code :

```
void main()
{
  printf("%d", printf("abc"));
}
```
2

3. (A) Solve any **One** :

(A1) Write a program to print all Armstrong numbers between 1 and 500. (If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number) [For example, 153 = (1 * 1 * 1) + (5 * 5 * 5) + (3 * 3 * 3)].

(A2) Write a program to print the sum of "n" terms of the following series :

Sum = $1 + x^2/2! + x^3/3! + x^4/4! + ... + x^n/n!$ 4

(B) Solve any **One** :

(B1) Write a program to print all Prime numbers between 1 and 500. Which of the following statements are true for the following program.

```
#include<stdio.h>
int main( )
{int  x = 10;
int  y = 100%  90;
for(i=1;  i< = 10;  i++)
if(x! = y);
printf("x=%d,  y=%d",  x,  y);
return(0);
}
```

(i) The printf( ) function is called 10 times.

(ii) The program will produce output x = 10, y = 10.

(iii) The ; after the if(x! = y) would not produce an error.

(iv) The program will not produce any output.

(v) The printf( ) function called infinite times. 4

(C) Solve any **One** :

(C1) What will be the output of following program code :

```
main()
      {
      int  i  =  0;
      for(;i++;printf("%d",i));
                printf("%d",i);
      }
```

(C2) What will be the output of following program code :

```
main()
{
int i, j;
for(i = 1, j = 10; i < 6: ++i, --j)
printf("\n %d %d", i, j);
}
```

2

4. (A) Solve any **One** :

(A1) Write a program to compute **Fun(x, y)** where,

Fun(x, y) = x; if y = 1

= 0; if y = 0

= Fun(x, y-1) + x; if y > 1

Also find what result does this function returns.

(A2) Write a program to print the Fibonacci series up to n^{th} term using recursive function. 6

(B) Solve any **One** :

(B1) What will be the output of following program code ?

```
int funct1(int a)
                    {
                       if(a)
                        return funct1(--a) + a;
                       else
                        return 0;
                    }
main( )
{
    int a = 7;
  printf("%d", funct1(a));
}
```

(B2) Consider the following function :

find(int x, int y)

{return((x<y)? 0 : (x – y));}

Let a, b be two non-negative integers. The call **find(a, find (a, b))** can be used to find the :

(a) Maximum of a, b

(b) Positive difference of a, b

(c) Minimum of a, b

(d) Sum of a, b 2

(C) Solve any **One** :

(C1) What will be the output of following program code ?

```
 int main()
{
  int *ptr, a = 10;
  ptr = &a;
  *ptr + = 1:
   printf("%d, %d/n", *ptr, a);
}
```

(C2) What will be the output of following program code ?

```
void main()
  {
      int x = 0
      int *ptr = &x;
      printf("%d,\n", *ptr, a);
      }
```

(a) Address of x

(b) Junk value

(c) 0

(d) Run time error 2

5. (A) Solve any **One** :

(A1) Write a C program to enter elements for 2-D Matrix and print the transpose of a matrix.

(A2) Write a C program to input '**n**' elements for an array and sort the array in ascending order using Insertion Sort. 6

(B) Solve any **One** :

(B1) What will be the output of following program code ?

```
#include <stdio.h>
int main()
{
  int sub[5] = {10, 20, 30, 40, 50};
  int i:
  for(i = 0; i < = 4; i++)
  {
     if(i < = 4)
     {
        sub[i] = i*i;
        printf("%d\n",sub[i]);
     }
  }
        return 0 ;
}
```

(B2) Is the following statement a declaration/definition. Find what does it mean ?

int (*x)[10]; 2

(C) Solve any **One** :

(C1) An array of pointers is same as

(A) Pointer to array

(B) Pointers to pointers

(C) Pointer to function

(D) Pointer to structure.

(C2) What will be the output ?

```
#include <stdio.h>
   void main()
{
  char a[10] [5] = {"hi", "hello", "fellows"};
  printf("%s", a[2]);
}
```

(A) fello

(B) hello

(C) ello

(D) ellows 2

6. (A) Solve any **One** :

(A1) Write a program to concatenate two strings using function and pointer [Do not use standard library function strcat()].

(A2) Define a structure for a student having name, roll number and marks obtained in six subjects. Write a program to input the details for 20 students and print the details of the students who have scored more than 70% marks overall. 6

(B) Solve any **One** :

(B1) What will be the output of following program code ?

```
#define square(x) x*x
main()
{ int i;
i = 64/square(4);
printf("%d", i);
}
```

(B2) What will be the output of following program code ?

```
#include <stdio.h>
#define a 10
void main()
{
     #define a 50
     printf("%d", a);
}
```

2

(C) Solve any **One** :

(C1) Give the syntax and explain the operations of following file handling functions with suitable example :

(i) fseek()

(ii) ftell()

(C2) What is command line argument ? 2