

[This question paper contains 10 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 844

I

Unique Paper Code : 32345102

Name of the Paper : Introduction to Programming

Name of the Course : **Computer Science : Generic Elective for Honours**

Semester : I

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Question 1 is compulsory.
3. Attempt any **five** questions out of **Q.2 to Q.8**.
4. Parts of a question must be answered together.

1. (a) Write a statement that uses the ternary conditional operator to set an integer variable `ticket` to 1 if `speed` is greater than 55 and 0 otherwise. (2)

(b) Write a single C++ statement that outputs the string `Generic Elective I` and the number 75 as shown below: `Generic Elective I 75` (2)

(c) An integer variable `temp` has the initial value 10. Write a C++ statement that uses a prefix decrement operator to decrease the value of `temp` to 9. (1)

(d) Declare a structure named `employee` for storing employee details (`name`, `salary`, `age`, `gender`). (3)

(e) Rewrite the following C++ code snippet using a for loop:

```
x=1;n=10;
```

```
while(x<n)
```

```
{
```

```
    cout<<x<<"\t";
```

```
    ++x;
```

```
}
```

(2)

(f) Write C++ statements to:

1) Define a constant `N` to be 100.

2) Declares a one dimensional array called `dArray` of type `double` that holds `N` elements.

3) Display the tenth element of the array `dArray`.

(2)

(g) What will be the output of following C++ code segment:

```
int age =9;
```

```
cout<<age++;
```

(1)

(h) Give the output of the following C++ code snippets:

i) `while(0)`

```
    cout << "I am inside while " << endl;
```

```
    cout << "I am outside while " << endl;
```

(1)

```
ii) for (int i = 1; i <= 10; i++)
    if(i%2 == 0) cout << i <<" ";
(2)
```

```
iii) int i = 10;
    for (; i<13 ; i++)
        cout<<"I am inside for loop "
        << endl;
(2)
```

(i) What is wrong with the following code snippet?

```
class First{
    int a;
    public:
        First(int i)
        {
            a = i;
        }
        void set(int n)
        {
            a = n;
        }
        void disp()
        {
            cout << "a = " << a << "\n";
        }
};
int main()
{
```

```
    First obj1;  
    obj1.set(2);  
    obj1.disp();  
    return 0;  
}
```

(3)

(j) Declare a class Student that is publicly derived from a class Person. Assume suitable data and member functions and their types. Function definitions are not required.

(4)

2. (a) A ten-digit phone number, such as 2127678900, has three parts: a 3-digit area code (such as 212), a 3-digit exchange (such as 767), and a 4-digit number (such as 8900). Write a C++ program that uses a structure named phone to store these three parts of a phone number separately. Declare and initialize a structure variable of type phone. Also write C++ statements to display this phone number.

(6)

(b) Write a C++ program to display the first n even numbers, where n is a user entered parameter.

(4)

3. (a) Write a C++ program that asks the user to enter the number of rows (r) and number of columns (c) of a 2-dimensional integer matrix marks. Here, r and c respectively refer to student ID and subject. Each cell value depicts the marks obtained by a student in a particular subject. Accept the marks matrix of order $r \times c$ from the user. Find the total marks for each student.

(6)

(b) Write a C++ program to print squares of numbers entered by the user using a while loop. When the number entered is negative, the loop should be exited. (4)

4. (a) Write a function `count` in C++ that accepts a one dimensional array `list` of integers. Also accept an integer variable `num` from the user. The function `count` returns the number of occurrences of `num` in `list`. Call this function from `main()` and display the result in `main()`. (4)

(b) Write a C++ program that accepts two floating point numbers from the user and displays the following menu.

1. Multiply

2. Divide

According to the choice entered by the user, the program employs a switch statement to perform the desired operations and display the result. (6)

(a) Find the errors in the following code snippet and give reasons for the same:

```
class C1
{
    int i;
    public:
```

```
    C1()
    {
        i=0;
    }
protected:
    int k;
};
class C2 : public C1
{
    :
    public:
        void add()
        {
            cout << k + i;
        }
};
int main()
{
    C1 obj1;

    C2 obj2;
    cout<<obj1.i;
    obj2.add();
}
```

(4)

(b) What is the output for the following code snippet?

```
i) int x = 5, y = 7;
    if (x = y)
```

```
cout << x << " is same as " <<
y << endl;
```

```
else
  cout << x << " is not same as "
  << y << endl; (2)
```

```
ii) int i = 15 ;
    for (int j = 2 ; j <= i/2; j++)
      if ( i%j == 0 )
        cout <<j<< " is a factor of "
        <<i<< endl; (4)
```

(a) Create a class Triangle having three floating point data members (side1, side2 and side3) corresponding to the three sides of the triangle. (2)

(b) Define a parameterized constructor for the Triangle class which takes three parameters to set the three sides of the triangle. (2)

(c) Define member functions for the following :

(i) Display the sides of the triangle

(ii) The function should return zero if the triangle is not equilateral and one otherwise. An equilateral triangle has all the three sides equal. (3)

- (d) Create an object of Triangle class in main function and show usage of the above member functions. (3)
7. (a) Create a class Building having the following integer data members:
no_Rooms, no_Floors and Area.
Derive the following two classes from Building:
- 1) House with two integer variables
no_bedrooms, no_washrooms
 - 2) College with two integer variables
no_classrooms, no_offices (6)
- (b) Write a function factors() in C++ that accepts an integer parameter num from the function main(). The function factors() returns the sum of all the factors of num. Recall that a number n is said to be a factor of m if n divides m. For example, 3 is a factor of 6; but 3 is not a factor of 7. (4)
8. (a) Declare a structure Time that includes three integer variables viz. hours, minutes and seconds. Declare a Time type structure variable CurrentTime. Write a C++ statement that sets hours member of the CurrentTime structure variable equal to 11, minutes member of the CurrentTime structure variable equal to 25 and seconds member of the CurrentTime structure variable equal to 12. (3)

(b) What is the output of the following code snippet?

```
char ch = 'x' ;
switch( ch )
{
    case 'a' :
    case 'e' :
    case 'i' :
    case 'o' :
    case 'u' :
        cout <<" Vowel " << endl;
    default : cout <<" Consonant " << endl;
}
```

(2)

(c) What is the output of the following code snippet?

```
void MyFunction(int a, int b = 40)
{
    cout <<" a = " << a <<" b = " << b << endl;
}
int main()
{
    MyFunction(20, 30);
    return 0;
}
```

(2)

(d) What is the output of the following code snippet?

```
class A{
    int k;
    public:
        A()
        {
            k=1;
        }
        void set(int n)
        {
            k = n;
        }
        void disp()
        {
            cout << "k = " << k << "\n";
        }
};

A f()
{
    A ob;
    ob.set(50);
    return ob;
}

int main()
{
    A obj1;
    obj1.disp();
    obj1 = f();
    obj1.disp();
    return 0;
}
```

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 974 I
Unique Paper Code : 32345301
Name of the Paper : Computer Networks and Internet Technologies
Name of the Course : Computer Science : G.E. for Honours
Semester : III
Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. All questions in 'Section A' are compulsory.
3. Attempt any five questions from 'Section B'.
4. Parts of a question should be answered together.

Section A

1. (i) Identify a layer of the OSI model responsible for the following functions :
 - (a) Route Determination
 - (b) Interface to Transmission Media
 - (c) Providing access for the end user
 - (d) Flow control

(2)

P.T.O.

- (ii) Differentiate between the terms Internet and Intranet. (2)
- (iii) List any two advantages of a multipoint connection over a point-to-point connection. (2)
- (iv) Differentiate between TCP and UDP. (2)
- (v) Define Functions in JavaScript. How are these different from methods? (2)
- (vi) Differentiate between Break and Continue statements with suitable example. (2)
- (vii) Differentiate between Alert and Confirm dialogue boxes. (2)
- (viii) Explain any two attributes of Table tag with example in HTML. (2)
- (ix) What is the significance of the twisting in twisted pair cable? (2)
- (x) Differentiate between Hub and Repeater. (2)
- (xi) List any two advantages of star topology in computer networks. (2)
- (xii) What is the difference between ordered and unordered list? Write HTML statement to display ordered list. (3)

Section B

2. (a) Explain functions of Transport Layer in the OSI model. (5)
(b) Identify components of a data communication system. (5)
3. (a) Define TELNET. Illustrate Remote Log-in using TELNET with the help of a diagram. (5)
(b) What are the advantages of Fiber Optics over Copper as a transmission medium? (5)
4. (a) Create a Registration Form for admission in a college with *Input Type*, *Select* and *Text Area* commands in HTML. (5)
(b) Create an HTML document containing Roll Number, student's name and Grades in a tabular form. (5)
5. (a) What do you understand by Events in JavaScript ? Write any three JavaScript event handlers with brief explanation. (5)
(b) Write a program that creates an HTML page accepting the name of user. Add a button to the page, on clicking which, the user should be greeted. (5)

6. (a) Write a program in JavaScript to read a list of n numbers and count the number of even numbers in the list. (5)
- (b) Create an HTML form that displays two text boxes and two radio buttons. The first text box accepts a numeric value. Write a JavaScript code such that:
- (i) If the first radio button is checked, the second text box should display the double value of the number entered in the first text box.
 - (ii) If second radio button is checked, the second text box should display the square of the number entered in the first text box. (5)
7. (a) Explain logical operators with their syntax in JavaScript. (5)
- (b) Discuss the different ways to apply a style sheet to an HTML document using examples. (5)
8. Write short notes on the followings (**any two**):
- (a) Radio Waves
 - (b) Real-time Conferencing
 - (c) Bridge
 - (d) Uniform Resource Locator (10)

Roll No.

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S. No. of Question Paper : 1366

Unique Paper Code : 62347501 IC

Name of the Paper : Visual Programming

Name of the Course : B.A. Programme : Computer

Application : DSE-1

Semester : V

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Question No. 1 is compulsory.

Answer any five questions from the Section B.

Section A

1. (a) What are the windows present in VB environment? 2
- (b) Write the names and use of any three controls present in the tool box. 3
- (c) What is an assignment statement? Explain its use with example. 2
- (d) Differentiate between check box and option button. 3

P.T.O.

- (e) What is the Tool Tip property of a control ? How can you set this property ? 3
- (f) What are Named and Intrinsic constants in VB ? Explain with examples. 3
- (g) What is a Message box ? Give its general form. 2
- (h) Define an array. Write the VB statement to declare single dimensional array of marks of class of 25 students. 2
- (i) Write the output of the following statements : 3
- (a) Printer. Print 1,2,3,4,5
 - (b) Printer. Print Tab(10); "name"; Tab(30); "Pay"
 - (c) Printer. Print.
- (j) What is Variant Data type ? Explain with an example. 2

Section B

2. (a) What do you mean by scope of a variable ? How can variables and constants be declared in a project having multiple modules ? 1+3

- (b) Differentiate between Step Into and Step Over in respect of debugging of a program. 2
- (c) Explain any *two* Format functions available in VB. 4
3. (a) State the difference between Do/Loop and For/Next loop with an example. 4
- (b) What is a Function ? How is it different from Procedure ? 4
- (c) Define Variable and Constant. How are they declared in a VB program ? 2
4. (a) How can you Add and Remove forms from a project ? 2
- (b) What are the different ways to add items in a List box ? Why does a list need both ItemData property and ListIndex property ? 2+4

P.T.O.

- (c) Give the output of the following VB statement : 2

```
Private Sub Cmd_Click ()
```

```
Dim A as Integer
```

```
Dim B as String
```

```
Dim C as String
```

```
A=5, B="5"
```

```
C=A & B
```

```
End Sub.
```

5. (a) What is the purpose of Val function ? 2

- (b) What are Data Control and Data Bound Controls ? Give any *two* properties of each. 2+4

- (c) Write the VB statement to set caption of a label to italics at design time. 2

6. (a) Write the Select Case statement for the following conditions : 4

- (i) If Age \leq 12, label should display "child"

(ii) If Age >12 and ≤ 18 , label should display "teenager"

(iii) If Age >18 and ≤ 59 , label should display "adult"

(iv) If Age >59 , label should display "Senior Citizen".

(b) Write the VB statement to do the following tasks : 6

(i) Declare an array named CurTemp with 3 rows and 3 columns.

(ii) Set the elements in the array as per the following table :

	Delhi	Mumbai	Srinagar
Jan	15	25	4
Feb	20	35	10
Mar	25	35	20

7: (a) Write a VB program to input 10 numbers in a list box and find the sum of the numbers. 5

(b) Write If-Then-Else construct for the following conditions : 5

(i) If weight >10 kg, label should display "Zone A"

(ii) If weight ≤ 10 kg and ≥ 5 kg, label should display "Zone B"

(iii) If weight ≤ 5 kg and ≥ 3 kg, label should display "Zone C"

(iv) Otherwise label should display "Zone D".

8. Create a project that takes an employee's name and sales as input. Each employee receives a basic pay of Rs.900 plus a sales commission of 6 percent of sales. Calculate the Gross Pay, Deductions and Net Pay as per the following condition : 3+7

Commission 6% of sales

Gross Pay Basic Pay + commission

Deductions 18% of gross pay

Net Pay

Gross Pay—deductions.

- (a) Design a form having Text boxes for employee name and sales. Use label to display the result of the calculations. Create command buttons for Calculate, Clear and Exit.
- (b) Write the code for calculating Gross pay, Deductions and Net Pay.

This question paper contains 7 printed pages]

Roll No.

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S. No. of Question Paper : 1367

Unique Paper Code : 62347502

I

Name of the Paper : Programming with Python

Name of the Course : B.A. (Programme) Computer

Application : DSE-1

Semester : V

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Question No. 1 is compulsory.

Attempt any 5 of Question Nos. 2 to 8.

Parts of a question must be answered together.

1. (a) Which of the following is an *invalid* name ? 3

(i) my_string_1

(ii) 2nd_string

(iii) foo

(iv) __init__

(v) in

(vi) it

(b) Which of the following is an *invalid* statement ? 1

(i) abc = 1,000,000

(ii) a b c = 1000 2000 3000

(iii) a,b,c = 1000, 2000, 3000

(iv) a_b_c = 1,000,000

P.T.O.

(c) What is the output of the following code segments ? 6

```
(i) x = 'abcd'
    for i in range(len(x)):
        x = 'a'
        print(x)
```

```
(ii) i = 1
     while True:
         if i%7 == 0:
             break
         print(i)
         i += 1
```

```
(iii) def foo(k):
        k[0] = 1
        q = [0]
        foo(q)
        print(q)
```

(d) What is the output of the following Python code fragment ? Justify your answer : 3

```
(i) weekdays =
    ['sun', 'mon', 'tue', 'wed', 'thu',
     'fri', 'sun', 'mon', 'mon']
    print(weekdays.count('mon'))
```

```
(ii)
weekdays =
['sun', 'mon', 'tue', 'wed', 'thu', 'fri',
 'sun', 'mon', 'mon']
print([[x, weekdays.count(x)] for x in
set(weekdays)])
```


- (e) Translate the following while loop into a for loop : 3

```
i = 20
while (i > 0):
    print "i = ", i
    i =- 1
```

- (f) Rectify the error (if any) in the given statements : 2

```
>>> str= "Hello Python"
>>> str[6]= "S"
```

- (g) Under what conditions is binary search used ? Give the outline of binary search algorithm. Given : 7

```
testlist=[0,1,2,8,13,17,19,32,42],
```

Illustrate the operation of the binary search algorithm to search for the number 13.

What is the output of the following code segments ? 10

```
(i) class test:
    def __init__(self,a="Hello World"):
        self.a=a

    def display(self):
        print(self.a)
obj=test()
obj.display()
```

```
(ii) class test:
      def __init__(self, a):
          self.a=a
```

```
      def display(self):
          print(self.a)
obj=test()
obj.display()
```

```
(iii) def power(x, y=2):
        r = 1
        for i in range(y):
            r = r * x
        return r
print power(3)
print power(3, 3)
```

```
(iv) x = 2
      for i in range(x):
          x -= 2
          print (x)
```

```
(v) i = 0
     while i < 3:
         print(i)
         i += 1
     else:
         print(0)
```

3. (a) For the given array `arr = [1, 2, 4, 3]`, apply bubble sort algorithm to sort the array elements and also show the modified list after each iteration. 5
- (b) What is a queue? Write a Python code to create an empty queue. Initialize front and rear suitably. 5

4. What will be the output of the applying the following list Functions on list given below ?

10

```
L1=[1, 3, 2, 12, 2, 4, 3]
```

```
L.append(10)
```

```
L.count(2)
```

```
L.index(12)
```

```
L.insert(2,15)
```

```
L.remove(2)
```

5. (a) Write a function to compute the following series :

3

$$\text{Sum} = 1 + 1/2^2 + 1/3^2 + \dots + 1/n^2$$

- (b) Evaluate the following expressions :

3

(i) $-7 * 20 + 8 / 16 * 2 + 54$

(ii) $5 \% 10 + 10 - 25 * 8 // 5$

(iii) $10 + 6 * 2 ** 2 != 9 // 4 - 3$ and $29 >= 29 / 9$

- (c) What will be the output of the following code segment ?

4

```
for letter in 'geeksforgeeks':
    if letter == 'e' or letter == 's':
        continue
    print 'Current Letter :', letter
```

6. (a) Write the output of the following code segments : 5

(i)

```
for letter in 'geeksforgeeks':
    if letter == 'e' or letter == 's':
        break
    print 'Current Letter :', letter
```

.....)


```
(ii) def myfunc(a):
        a = a + 2
        a = a * 2
        return a
print myfunc(2)
```

- (b) Write a python function to find the sum of all the numbers provided by the user as the input. [5]
7. (a) Differentiate between type conversion and type coercion with the help of an example. [5]
- (b) What will be the output the following code ? [5]

```
def f(x, l=[]):
    for i in range(x):
        l.append(i*i)
    print(l)
```

```
f(2)
f(3, [3, 2, 1])
f(3)
```

8. (a) Write the output of the following python code : 5

```
lis = [1, 2, 3]
lis1 = [4, 5, 6]
lis2 = lis + lis1
print ('list after concatenation is')
for i in range(0, len(lis2)):
    print (lis2[i]),
print ("\r")
lis3 = lis * 3
print ('list after combining is')
for i in range(0, len(lis3)):
    print (lis3[i]),
```

(b) Write output of the following python code : 5

(i)

```
x = "Welcome to GeeksforGeeks"  
print x[2:5]  
print x[4:10:2]  
print x[-5:-3]
```

(ii)

```
i = 0  
while i < 5:  
    print(i)  
    i += 1  
    if i == 3:  
        break  
else:  
    print(0)
```


This question paper contains 4 printed pages]

Roll No.

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S. No. of Question Paper : 1441

Unique Paper Code : 62343502

Name of the Paper : Open Source Software

Name of the Course : B.A. (Prog.) Computer Applications :

Skill Enhancement Course

Semester : V

Duration : 2 Hours

Maximum Marks : 25

(Write your Roll No. on the top immediately on receipt of this question paper.)

Question No. 1 is compulsory.

Attempt any *three* questions from rest of the five.

1. (i) Which loop repeats a group of statements for each item in a collection of objects for each element in an array ?
- (a) While loop
 - (b) do while loop
 - (c) do until loop
 - (d) for loop

P.T.O.

- (ii) A _____ variable is declared inside a procedure.
- (a) global
 - (b) local
 - (c) external
 - (d) internal
- (iii) _____ indicates whether a particular condition is on or off.
- (a) Text box
 - (b) Check box
 - (c) Combo box
 - (d) List box
- (iv) A _____ is used for both input and output.
- (a) label
 - (b) text box
 - (c) combo box
 - (d) command button
- (v) Variable declaration is done using the _____ keyword.
- (a) Var
 - (b) Dim
 - (c) Declare
 - (d) Static

- (vi) Which file format offers the best image compression ?
- (a) JPG
 - (b) GIF
 - (c) PNG
 - (d) BMP
- (vii) What is the shortcut key combination in GIMP, to cut the selected item ?
- (a) Ctrl + Y
 - (b) Ctrl + C
 - (c) Ctrl + X
 - (d) Ctrl + Z
- (viii) What will happen if GIMP image is bigger than the image window ?
- (a) Image resize dialog box appears
 - (b) GIMP displays the image in a reduced zoom level
 - (c) Error message is shown
 - (d) Image is not displayed
- (ix) Which programming language is used to write plug-ins in GIMP ?
- (a) C
 - (b) Java
 - (c) Lua
 - (d) Python

- (x) What is the shortcut key combination in GIMP, for undoing the last action ?
- (a) Ctrl + Z
- (b) Ctrl + C
- (c) Ctrl + X
- (d) Ctrl + Y. 10×1=10
2. (a) Highlight any *three* features of BSD License. 5
- (b) Briefly explain *two* features of Academic License. 2
3. (a) Which two licenses permit commercial use of the Open Source Software ? 3
- (b) List *two* disadvantages of open source software. 2
4. (a) Define the term "warranty of merchantability". 3
- (b) What do you understand by the term Open Source ? 2
5. (a) How is LGP different from GPL ? 3
- (b) What does the term "You" mean in Apache License ? 2
6. (a) Differentiate between Contributor and Licensor. 2
- (b) What does Academic License state about Jurisdiction, Venue and Governing Law ? 3

(f) What do you mean by computer network ? 2

(g) Give full forms of the following 4

(i) OCR

(ii) BIOS

(iii) WWW

(iv) URL

(h) Write short notes on : 4

(i) Cache Memory

(ii) Primary Key.

Section B

2. (a) List and explain different types of scanners. 4

(b) Explain various components of a computer system with the help of block diagram. 6

3. (a) What is ROM ? Differentiate between EPROM and EEPROM. 4

(b) Describe any *three* guided and unguided data transmission media used in data communication. 6

4. (a) Explain the functions of any four registers used in a computer system. 4

(b) What is system bus ? Explain various types of the system bus. 6

5. (a) Write short notes on the following devices : 4

(i) Touch Screens

(ii) Joystick.

(b) Differentiate between the following : 6

(i) Printer and Plotter

(ii) Pointing and Picking devices.

6. (a) What is an operating system ? Explain the following types of operating system : 5

(i) Batch Processing Operating System

(ii) Multiprocessor Operating System.

(b) Explain the different components of a data communication system. 5

P.T.O.

7. (a) What are the different types of relationships in a database management system? Explain with the help of a suitable example. 6

(b) Explain four advantages of database management system. 4

8. (a) Describe electronic mail as a way to communicate with other internet users. Also explain its working with the help of an example. 4

(b) Explain LAN, WAN and MAN with a suitable example of each. 6