This question paper contains 11 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **8460-A**

Unique Paper Code : **32345104** **J**

Name of the Paper : **Programming Using Python**

Name of the Course : **Computer Science : G.E. for Honours**

Semester : **I**

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 *five* questions out of Q. **2** to Q. **8**.

Parts of a question must be answered together.

1. (*a*) What unit is used to measure the following : 1

(*i*) CPU Speed

(*ii*) Memory Size.

(*b*) Give the output of the following code snippet : 2

```
x, y = 2, 6
x, y = y, x + 2
print y
print x>>2
```

P.T.O.

(c) Given the set marks as : 2

```
marks = {60,70,75}
```

Give the output/indicate error in each of the following code snippets : 2

(*i*)
```
marks1 = marks + {2}
print(marks1)
```

(*ii*)
```
print(marks[1:])
```

(*d*) The tuple t is defined as : 2

```
t = ("Ram","Shyam",[40,38])
```

Give the output/indicate error in each of the following code snippets :

(*i*)
```
t[1] = "Lakhan"
print(t)
```

(*ii*)
```
t[2][0] = 45
print(t)
```

(*e*) Identify the error in the following code snippet : 2

```
x = 101
if (x%2) = 0:f
    print("Even Number")
else
    print("Odd Number")
```

(*f*) Define a class `Triangle`, each of whose instances comprises three attributes `side1`, `side2` and `side3`. Define the constructor for the class. 1+2=3

(*g*) Given the list names as : 2

```
names = ["John","Ben","Walter","Mike"]
```

Write a single code statement that sorts the list elements in the ascending order of length of the elements.

(*h*) A queue `myQueue` has two attributes, `front` and `rear` that contain indices of the first and last elements of `myQueue` at any instant. Consider that `myQueue` is

initially empty. Show using diagrams, the contents of myQueue, when elements : 2

(*i*) "Sita", "Gita" and "Rita" are added to myQueue in that order.

(*ii*) One element is deleted from myQueue.

(*i*) Write a Python program that accepts as input your favorite color as a string. Interchange the first and last characters of your favorite color and display the resulting string. 3

(*j*) Write a function that takes as input a list of strings and a string (say str1) to be searched in the list. The function should use linear search to check whether the resulting string exists in the list. It should return True if the string is present in the list and False otherwise. (Do not use Python built-in functions for the search.) 3

(k) (i) Define a dictionary projects mapping Project ID to number of employees assigned to that project as per the following table :

Project ID	Number of Employees
"P1"	10
"P2"	6
"P3"	7

(ii) What will be the output produced on execution of the statement ?

```
print(max(projects))
```

(l) Which mode will you use to open a file in Python for writing to a file without overwriting the existing contents of that file ? 1

2. (a) Write a python program to take n numbers as input from the user and sort them using seletion sort. Show the modified list at each step of selection sort. 6

(*b*) Using a while loop, write a user defined python functio to find the sum of all the positive numbers entered b the user. As soon as the user enters a negative numbe stop taking in any further input from user and displa the sum.

(*c*) Give the output of the following code snippet :

```
age = input("Enter your age and I
will double it:")
print(age*=2)
```

3. (*a*) Write a function `func()` that takes two parameters: a list `empId` and a list `projId` having corresponding projects that employees are working on. For example,

```
empId = [1,2,3,4]
projId = ["p1","p2","p1","p1"]
```

The function `func()` returns a list of tuples, each of which includes `projID`, and the list of employees working on it. For instance, the function call `func(empId, projId)` would return `[("p1",[1,3,4]), ("p2",[2])]`.

(*b*) A garment shop is offering 10% discount on garments for girls and 5% discount on garments of boys. In case the age of the child is below 5 years the discount offered is 15% irrespective whether the customer is a girl or a boy. Write a python program that takes as input the `name`, `age`, `gender` and `price_of_items` bought and displays the net payable amount. 4

4. (*a*) Write a Python function `pattern(n)` which takes a number `n(0<n<10)` as parameter and prints a pattern like the one shown below. For example, for `n = 5`, the following pattern is displayed : 4

```
1
1  2
1  2  3
1  2  3  4
1  2  3  4  5
```

(*b*) Write a user defined function `sumSquares(n)` in Python that accepts a number `n` as an argument. The function returns sum of squares of first `n` numbers. Write a Python statement to call this function and print the result for n=6. 6

5. (*a*) Consider the sets `s1` and `s2` defined below : 4

```
s1 = {"P1","P2","P3","P4","P5"}
s2 = {"P1","P3","P4"}
```

What will be the output produced on execution of the following statements for the given sets :

(*i*) `set.symmetric_difference(s1, s2)`

(*ii*) `s1.union(s2)`

(*b*) Consider the following string : 2

```
msg = "Goodmorning! Welcome To This Class"
```

Determine the output of the following functions :

(*i*) `msg.find("o")`

(*ii*) `msg.capitalize()`

(c) Write a Python program to write lines of text to a file "File1.txt". Then close the file read the lines written to it and prints them. 4

6. (a) Evaluate the following postfix expression using a stack. Show the contents of the stack at each step : 6

```
A  B  C  *  +  D  +
```

(b) What will be the output of the following line : 2

```
"sum of 2 and 3 is" + 5
```

(c) Write a Python program that reads a number in feet, converts it to meters, and displays the result. 2

One foot = 0.305 meters.

7. (a) Write a Python program to accept a string from the user. Replace all the vowels in the given string with the symbol "*". Display the modified string. 6

(b) Create a dictionary `subj_stud` that maps a list of students to the subject they are studying as per the

following information : 4

Subject	Students
Maths	Joe, Sue, Ben
Physics	Joe, Mike, Michael
Biology	Sue, John
Computers	John, Chris

Write statements for finding the subjects with the minimum number of students and removing those subjects from `subj_stud` (in this case Biology and Computers).

8. Define a class `Student` storing information related to students of an institution. The class should contain the following data members : 4+3+3-10

(*i*) `rollNum` : Student's Roll No,

(*ii*) `name` : Student's name and

(*iii*) `percentage` : Student's percentage.

The class should support the following methods :

(*i*) Constructor

(*ii*) `set_percentage(newPercentage)`

(*iii*) `get_data()`

Write Python statements for the following :

(*i*) Create an object `stud1` of the class `Student` having `rollNum` as `101`, `name` as `"Bharat"` and `percentage` as `79`.

(*ii*) Set the value of percentage to `81` for the object `stud1` using `set_percentage` method.

(*iii*) Display the values of all data members of `stud1` using `get_data` method.

[This question paper contains 4 printed pages]

Your Roll No. : .....

Sl. No. of Q. Paper : **7046** **J**

Unique Paper Code : 62341101 - OC

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

Name of the Paper : Computer Fundamentals

Semester : I

Time : 3 Hours ***Maximum Marks : 75***

Instructions for Candidates :

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

(b) **Section -A** is compulsory.

(c) Attempt any **five** questions from **Section-B**.

Section - A

1. (a) Explain the use of computers in Education and Government. 2

(b) Give full form of the following abbreviations : 3

(i) PCB

(ii) AGP

(iii) SCSI

P.T.O.

(c) Define a bit and a byte. What are the two key factors that characterize the memory ? 3

(d) List any four computers in the category of microcomputer. 2

(e) Name three pointing devices. Also in which area each pointing device is used ? 3

(f) Perform the following : 3

(i) Convert the $(47.75)_{10}$ number into binary

(ii) Convert the $(E4.16)_{16}$ number into Decimal

(g) What is a sign bit ? Which bit is considered as a sign bit when representing a number ? 2

(h) Name and write the functionality of three buses that are involved in the interaction of CPU with memory and I/O devices. 3

(i) List any two advantages of Cloud computing. 2

(j) State the purpose of system software 2

Section - B

2. (a) Differentiate Microcomputer and Minicomputer with examples. 4

   (b) Differentiate between Primary Memory and secondary memory. 4

   (c) Explain the booting process when computer is switched on. 2

3. (a) What is a bootstrap loader? List the different kind of ROM memory. 5

   (b) List the different memories available in the computer in order of their hierarchy with respect to the CPU. 5

4. (a) Give differences between the following : 2+2=4

   (i) SIMM and DIMM memory module

   (ii) Impact printers and Non Impact printers

   (b) Describe hand-held scanners and flat-bed scanners with examples. 4

   (c) What are magneto-optical disk ? 2

5. (a) Perform the following : 2+2=4

   (i) Find 1's complement of the number (11000011111)

   (ii) Find 2's complement of the number (1100000100)

(b) Perform binary addition of the following numbers : 2+2=4

(i) (+7) + (-9)

(ii) (-12) + (+15)

(c) How is Unicode different from other binary coding schemes ? 2

6. (a) Explain any two parameters use to measure the performance of a computer system ? 2+2=4

(b) Explain any two functions performed by an operating system. 2+2=4

(c) What do you understand by device driver? Explain. 2

7. (a) What do you understand by computer virus ? How it works ? How to cure the infected system ? 2×3=6

(b) Define word size. What are the functions of the control unit ? 1+3=4

8. Write short notes on the following terms : 2×5=10

(i) Google Scholar

(ii) Monitor

(iii) eLibrary

(iv) Embedded systems

(v) CMOS

This question paper contains 4 printed pages.

Your Roll No. .....

Sl. No. of Ques. Paper	: **8636**	**J**
Unique Paper Code	: **62341101**	
Name of Paper	: **Computer Fundamentals**	
Name of Course	: **B.A. (Prog.) Computer Applications**	
Semester	: **I**	
Duration	: **3 hours**	
Maximum Marks	: **75**	

Attempt ***all*** *the parts of Question No. 1.*

Attempt any ***five*** *questions from Question No. 2 to Question No. 8. All parts of a question should be answered together.*

SECTION A

Attempt all the parts.

1. (a) Write the full forms of :

(i) MICR

(ii) FLOPS

(iii) EEPROM

(iv) OMR 4

(b) Convert the binary number 011011 into the following representations :

(i) 1's complement

(ii) 2's complement 2

P.T.O.

(c) Differentiate between volatile memory and non-volatile memory. Give examples of each. 2

(d) Briefly explain the working of the following registers :

(i) PC

(ii) MBR 4

(e) Add $(01010)_2$ to $(10000)_2$. 2

(f) Define the following :

(i) Multiprogramming.

(ii) Cache memory. 4

(g) What is application software? Explain giving example. 3

(h) Arrange the memories in increasing order of their speed :

Register, RAM, Hard Disk, Magnetic Tape 2

(i) Convert the following numbers to binary numbers :

(i) $(1694)_{10}$

(ii) $(135)_8$ 2

SECTION B

Attempt any five questions.

2. (a) What are Point-and-Draw devices? Explain any *two* with examples. 6

(b) What is RAM? Briefly describe the two types of RAM. 4

3. (a) Differentiate between :

(i) Dot Matrix and Inkjet Printers

(ii) Direct access and Sequential access.

(iii) Minicomputer and Supercomputer. 6

(b) What are Magnetic tapes? How is the data stored on them? 4

4. (a) What do you understand by Timesharing? What are its advantages? 4

(b) Define operating system. What are its functions? 6

5. Write short notes on :

(i) Cloud computing

(ii) ROM

(iii) Microcomputers

(iv) Flash Drive

(v) Mouse 2×5

6. (a) What are the components of computer hardware? Describe functions of each component with the help of a diagram. 6

(b) Define a Bus. What are the different types of buses? 4

7. (a) Subtract the following using complementary method :

(i) $(110111)_2 - (0100100)_2$

(ii) $(1100)_2 - (1011)_2$ 4

(b) What is an optical disk? Explain the working of an optical disk. 6

8. (a) Explain briefly the use of computers in the following areas :

(i) Advertising

(ii) Medicine

(iii) Home.

(b) What do you understand by base of a number in a number system? Give an example to illustrate the role of base in positional number system.

This question paper contains 4+1 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **7086**

Unique Paper Code : **62344328** **J**

Name of the Paper : **Computer Networks and Internet Technologies**

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

Semester : **III**

Duration : **3 Hours** Maximum Marks : **75**

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

Section A is compulsory.

Attempt any *five* questions from Section-B.

Section - A

(Compulsory)

1. (*a*) Describe the following terms : 6

(*i*) Protocol

(*ii*) WAN

(*iii*) Transmission Medium.

(*b*) Give *two* properties of a JavaScript language. 2

P.T.O.

(*c*) Differentiate between a static and a dynamic web page.

(*d*) Write a command to create a link to a web page in an HTML file.

(*e*) Write HTML statement to make "pic.jpg" as background picture of a web page.

(*f*) What is a twisted pair cable ? Differentiate between Category 3 and Category 5 twisted pair cables.

(*g*) What is the full form of HTTP ? In which layer HTTP protocol operates ?

(*h*) What is mesh topology ? Give *one* advantage and *one* disadvantage of mesh topology.

Section - B

(Attempt any **5** questions)

2. (*a*) Compare the characteristic features of Hubs and Switches based on the layers, these devices operate and the way these devices handle data transmission.

(*b*) Write a program in JavaScript, to accept *n* numbers from user to find their sum and average. 5

3. (*a*) What is microwave transmission ? Give *two* advantages of microwave communication over fiber. 5

(*b*) Write an HTML program to generate the following web page : 5

Academic Performance
1. Excellent 2. Very Best 3. Best 4. Average
Other Qualities
• Socially Responsible • Polite • Helpful • Adaptive

4. (*a*) Write an HTML code to generate the following table :

Column 1	Column 2	Column 3
Row 1 Cell 1	Row 1 Cell 2	Row 1 Cell 3
	Row 2 Cell 2	Row 2 Cell 3
Row 3 Cell 1		

(*b*) Give any *three* applications of internet. 3

(*c*) Which function is performed by the "repeater". 2

5. (*a*) What are JavaScript datatypes ? Write about any *two* datatypes available in JavaScript. 5

(*b*) List different layers of OSI reference model. Write about the functions performed by the network layer in the OSI reference model. 5

6. (*a*) What do you understand about the criteria like performance, reliability and security in a computer network. 5

(*b*) Describe the term URL with its different parts ? How is it different from URI ? 5

7. (*a*) Differentiate between simplex, half-duplex, and full-duplex communication channel. 5

(*b*) Describe the functions performed by the following HTML tags : 5

(*i*) <HR>

(*ii*) <IMG>

(*iii*)

(*iv*) <P>

(*v*) <I> text </I>

8. Write short notes on the following (any *five*) : 10

(*a*) Web Crawler

(*b*) Search Engine

(*c*) Increment and Decrement operators in JavaScript

(*d*) Hypertext

(*e*) Geosynchronous Satellite

(*f*) Deep Web

(*g*) Client server network

(*h*) SMTP.

This question paper contains 10 printed pages.

Your Roll No. .....

No. of Ques. Paper	**: 8174 J**
nique Paper Code	**: 32345102**
ame of Paper	**: Introduction to Programming (OC)**
ame of Course	**: Computer Science : Generic Elective**
emester	**: I**
uration	**: 3 hours**
laximum Marks	**: 75**

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

Question No. 1 is compulsory.

Attempt any five questions out of Q. No. 2 to Q. No. 8.

Parts of a question must be answered together.

1. (a) Write a C++ statement using built-in function which is equivalent to the mathematical expression 5^3. 1

(b) Suppose a and b are integer variables having values 8 and 5 respectively. What will be the value of the following arithmetic expression? 1

```
cout<<2*b+3*(a-3);
```

(c) What will be the output produced on execution of the following code snippet : 1

```
int speed =5;
int x = - - speed;
cout<<x;
```

P.T.O.

(d) Write a statement in C++ that declares a 10 element character array named firstName. Also, initialize it to the empty string. 1

(e) Write statements in C++ to open a file named text1.dat in output mode and write the value of an integer variable sum having value 20. 2

(f) What will be the output produced on execution of the following code snippet :

```
intnum[2] [2] = {{3, 8, 6}, {9, 4,7}};
int a,b;
a = num[1] [2];
b = num [2] [2] ;
c=a+b;
cout<<c;
```

2

(g) Write C++ statements for the following :

(i) Declare a structure Course having two integer members as courseNo and fee.

(ii) Define and initialize a structure variable course1, for which courseNo and fee should be initialized to 301 and 5000 respectively.

(iii) Display the values of members of course1. 3

(h) Define a function product that accepts two integer numbers as input parameters and returns their product. 3

(i) What is wrong with the following code snippet? 3

```
class First
{
```

```
int a;
First(int n)
{
    a = n;
    }
};
int main ()
    {
        First obj1(1);
        return 0;
    }
```

(j) Write a C++ statement that :

(i) Declares a one dimensional array called Num of type integer.

(ii) Initializes it with marks of four subjects as 87, 69, 71 and 53.

(iii) Display total marks. 4

(k) Write C++ statement for the following :

(i) Declare a class Animal having one character array data member color.

(ii) Derive a class Type publicly from class Animal having another character array data member Breed. 4

(a) A point on the two-dimensional plane can be represented by two numbers: an x coordinate and a y coordinate. For example, (4, 5) represents a point 4 units to the right of the vertical axis, and 5 units up from the horizontal axis. The sum of two points can be defined as a new point whose x

P.T.O.

coordinate is the sum of the x coordinates of the two points, and whose y coordinate is the sum of the y coordinates. Write a C++ program that uses a structure called point to model the point. Declare three variables of the declared structure point. Accept the values of two of these variables from the user. Set the third point structure variable equal to the sum of the other two, and display the value of the new point. 6

(b) Write a C++ program using a function swap () which accepts two integer variables x and y as an argument and swaps them without using a third variable. Call this function from main( ). 4

3. (a) What will be the output produced on execution of the following code snippet :

```
int x = 10;
do{
    cout<< x <<endl;
}while(x<=10);
```

2

(b) Identify the error in the following code snippet :

```
float x = 20.2f;
switch (x) {
  case 20.1f:
      cout<< "Case 1" <<endl;
  case 20.2f:
```

```
        cout<< "Case 2" <<endl;
    case 20.3f:
        cout<< "Case 3" <<endl;
        break;
    default:
        cout« "Default" «endl;
        break;
}
```

2

(c) The following code snippet is meant to determine whether a number n is prime. When executed for n is 20; the program segment prints "Number is prime". What is the logical error in the code? Also rectify the error to make the program work correctly.

```
int n = 20;
int f = 0;
for (int i = 2; i <= n/2; i++)
{
    if (n%i = =0)
    {
        continue;
        f = 1;
    }
if (f = = 0)
        cout<< "Number is prime";
```

P.T.O.

else

cout<< "Number is not prime";

3

(d) Write a program that inputs an employee's name and salary from the user and writes it to a file. 3

4. (a) Write a C++ program that asks the user to enter the number of rows (r) and columns (c) of a 2-dimensional integer matrix A, and accepts the matrix A of order r*c from the user. Write a function to find and display row-wise the transpose of matrix A. Transpose of a matrix is a new matrix of whose rows are the columns of the original matrix. The order of the new matrix is c*r. 6

(b) Define a function reverse () that accepts a non-negative integer n as parameter and returns the number obtained by reversing the digits of n. For example, the function call reverse (234) should return 432. 4

5. (a) Create a class Product having three data members: name- that specifies name of a product, pricethat specifies price of the product, an array called sales storing number of items of the product sold in five regions. 3

(b) Create a parametrized constructor for this class that initializes the three members. 2

(c) Define member functions for the following :

(i) Displaying the values for the three members of the Product class. 2

(ii) Calculating and displaying the total sales for a product in the five regions and the amount of money earned through the sales. 2

(d) Create an object of the class that would invoke the parametrized constructor created in part (b) above. 1

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

```
class C1{
public:
int i;
    C1 ( )
    {
        i=0;
    }
    void disp ( )
    {
        cout<< i <<"\n";
    }
protected:
    int k;
} ;
class C2 : protected C1 {
public:
```

```
    int j;
    C2 ( )
    {
        j =0;
    }
    void display ( )
    {
        cout<< j <<i <<k;
};
int main ( )
{
C2 obj;
cout<<obj.k;
cout<<obj.i;
}
```

4

(b) Write a C++ program to accept a number from the user. Call a function check ( ) to find whether this number is an Armstrong number. An Armstrong number is a number the sum of cubes of whose digits is equal to the number itself. (For example, 135 is an Armstrong number as $135 = 1^3 + 3^3 + 5^3$). The function returns 'y' in case number is Armstrong otherwise the function returns 'n'. 6

7. (a) Create a class Vehicle with the following attributes : model, year and price.

Define a member function display( ) in the class to print the values of the three attributes. The function prototype is given as :

void display ( ) 2

(b) Derive a class Car from the class Vehicle with attributes numberOfPassengers and AC(Yes/No). Define a constructor in the class Car that initializes the attributes numberOfPassengers and AC and also initializes the three attributes of the Vehicle class.

Define a member function display( ) in the class to print the values of the two attributes. The function prototype is given as :

void display ( ) 6

(c) Declare objects of both the classes in the main () function and invoke the display function for both. 2

8. (a) Declare a structure School that includes three integer variables, *viz*, rollno, age and marks. Declare a School type structure variable self. Write a C++ statement that sets rollno member of self to 11, age member to 19 and marks member to 87. 4

(b) Write a function vowelCount ( ) in C++ that accepts a character array designation as parameter from the function main ( ). The function vowelCount ( ) finds the total number of vowels in the array designation and returns this count to the function main ( ). 4

(c) What will be the output produced on execution of the following code snippet : 2

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

This question paper contains 4 printed pages.

Your Roll No. .....

Sl. No. of Ques. Paper	: **8299**	**J**
Unique Paper Code	: **32345301**	
Name of Paper	: **Computer Networks and Internet Technologies**	
Name of Course	: **Computer Science : Generic Elective**	
Semester	: **III**	
Duration	: **3 hours**	
Maximum Marks	: **75**	

Section A is compulsory.

Attempt any five questions from Section B.

SECTION A

1. (a) Give three differences between TCP/IP and OSI network models. 3

   (b) Assuming that ten devices are to be arranged in a mesh topology, how many cables are needed? How many ports are needed for each device? Assume that all connections are full-duplex. 2

   (c) What is Cladding? 2

   (d) Give HTML code to do the following using style tag :

   (i) set the color of heading (h1) as red

   (ii) set the color of paragraph as blue. 3

   (e) Write an HTML statement to make an image as marquee. 2

P.T.O.

(f) Give any three advantages of using CSS. 3

(g) What is an event in JavaScript? What is focus event? 2

(h) Find the output of the following code :

(i) document.write("1" + 5 + "3");

(ii) var $x = 10$;

var y = "10";

document.write(x = = =y); 2

(i) What is the difference between simplex, half-duplex and full-duplex in transmission modes? 3

(j) What is the difference bewteen Internet and Extranet? 3

SECTION B

2. (a) At what layer(s) in the OSI model do the following network devices operate :

(i) Router

(ii) Hub

(iii) Bridge

(iv) Gateway

(v) Repeater. 5

(b) Write a JavaScript program to enter the name, roll no, subject and marks of a student. If the marks > 100, display an alert box with message "Erroneous data", else the alert box should display the message "Fine". 5

3. (a) Differentiate between guided and unguided transmission media. 5

(b) Design an HTML page with two textboxes and two radio buttons named enter, number, result, square and cube respectively. Write a JavaScript code :

(i) that accepts the entered text as a numeric value from the first text box

(ii) depending upon the selected radio button, displays the output in the result box as square or cube of the number entered. 5

4. (a) What is CSS? Describe four ways of using CSS in HTML page. 5

(b) What are the parameters that affect the effectiveness of a communication system? 5

5. (a) Write a JavaScript statement to set the background color of an HTML document as red. 2

(b) Describe two attributes of form tag. 3

(c) Write an HTML code to create a window that is divided into three horizontal frames, in which first two rows are further divided into two columns and the last row is as it is as shown below : 5

<table>
<tr><td>Frame 1</td><td>Frame 2</td></tr>
<tr><td>Frame 3</td><td>Frame 4</td></tr>
<tr><td colspan="2">Frame 5</td></tr>
</table>

6. (a) What is the difference between ring and bus topologies? 4

(b) Write a code to create the following structure in HTML :

Assume that company logo is an image stored in the file abc.jpg at C:\Document\desktop. 6

P.T.O.

Invoice #123478		14 April 2024		Company Logo
Pay to : Acme Billing Co. 123, Main Street Delhi 12345		Customer : AK Singh 321, Sub Way Delhi West 110046		
Name/Desc	Qty	@	Cost	
Paperclips	100	20	2000	
Staplers	150	40	6000	
Total			8000	

7. (a) Give two services provided by each layer of the OSI model. 7

(b) Briefly describe any three attributes of table tag in HTML. 3

8. (a) What is the purpose of using :

(i) FTP

(ii) Telnet

(iii) HTTP

(iv) m-Commerce. 2×4=8

(b) Give one advantage and one disadvantage of Wireless LAN network over wired network. 2

This question paper contains 8+2 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **7125**

Unique Paper Code : **62347502** **J**

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**.

All parts of a question must be answered together.

Due credit will be given to the structure and documentation of the code. For every program/function you must include as comments the following :

Objective :

inputs/input parameters :

outputs/output parameters :

P.T.O.

1. (*a*) For each of the following, indicate whether it is a valid Python keyword. 2

(*i*) `class`

(*ii*) `not`

(*iii*) `if`

(*iv*) `exec`

(*b*) How does the effect of the following two statement differ ?

(*i*) `a -= a - 3`

(*ii*) `a = a - 3`

(*c*) Give the output that will be produced on execution o the following code segment :

```
s1 = "learning python is FUN!!"
s2 = s1.capitalize()
s3 = s1.title()
print(s2)
print(s3)
```

(d) Consider a queue q. Write a Python function display() that displays content of queue q if queue is not empty, otherwise, it displays the message "Queue is Empty". 2

(e) Identify error(s), if any, in the following code segment : 2

```
s1 = "I am a String"
s1[4] = "not"
print("String s1 is, " + S1)
```

(f) Give the output that will be produced on execution of the following code segment : 3

```
f = 10
m = 4
for i in range(f, 0, -1):
    p = m * i
    print(p)
```

P.T.O.

(*g*) Give the output that will be produced on execution of the following code segment : 3

```
v = 5
def sum(n1, n2):
    v = n1 + n2
    print("v inside sum: ", v)
print("v before sum:", v)
sum(7, 3)
print("v after sum:", v)
```

(*h*) Write a Python function `factors(x)` that takes an integer value `x` and find factors of `x`. 4

(*i*) Give the output that will be produced on execution of the following code segment : 5

```
list1 = [1.32, 2.45, 6.13, 3.65, 8.42, 5.26]
list1.remove(6.13)
print(list1)
print(list1.index(3.65))
list1.insert(3,9.24)
print(list1)
print(list1.pop())
print(list1[1:4:2]
```

2. Define a class Item that keeps record of items available in a shop. The class contains two data members `name` and `quantity` that stores name and available quantity of an item in the shop. Define the constructor for this class to create an object with given `name` and `quantity`. Define methods `update` and `display`. The method `update` modifies the available quantity of the item. It the item is purchased, quantity is increased by the number of units purchased and if item is sold, quantity is decreased by the number of units sold. The method `display` prints the item information. 10

3. (*a*) Define a function `insertionSort(list1)` which accepts a list `list1` as an input argument and sorts the list using insertion sort. 6

(*b*) Illustrate the operation of the `insertionSort(list1)` function defined in part (a) on the following list by showing how the list would appear at the end of each iteration : 4

```
[24, 35, 6, 15, 82, 49].
```

4. (*a*) Write a python function `searchKey(lst,k)` for searching an item `k` in the list `lst` of `n` integers using binary search. The function should return the index of the item `k`, if `k` is present in the list, otherwise, it should return `-1`. 6

(*b*) Translate each of the following mathematical expressions into an equivalent Python expressions : 4

(*i*) $b\ (c + d^3) / 3$

(*ii*) $z(6+3z) + x(5-x)/y$

5. (*a*) Identify error(s), if any, in the following code segment : 2

```
def test(a, b):
    a[1] = 'T'
    b[1] = 'j'
x = 'this'
y = ['m', 'n', 'o']
test(x, y)
print(x, y)
test(x, y[:])
print(x, y)
```

(*b*) Give the output that will be produced on execution of the following code segment : 4

```
l1 = ['P', 'Q', 'R']
l1.append('O')
print(l1)
print(l1.pop(1))
del l1[1]
print(l1)
```

(*c*) Give the output that will be produced on execution of the following code segment : 4

```
a = 16  # 16 in binary: 0001 0000
b = 8   # 8 in binary: 0000 1000
a = a ^ b
print(a, b)
b = b << 3
print(a, b)
a = ~b
print(a, b)
a = a & b
print(a, b)
```

6. (*a*) Consider a stack `s` of integers that is initially empty. Perform the following operations in sequence on the stack `s` and show the modified stack `s` (using a diagram) after each of the following operations : 5

(*i*) push 18

(*ii*) pop

(*iii*) push 7

(*iv*) push 5

(*v*) pop.

(*b*) Evaluate the following expressions : 5

(*i*) `2 ** 2 ** 3`

(*ii*) `not 10 == 8 and 6+3 != 9`

(*iii*) `6 ** 2 // 12 % 4`

(*iv*) `'list' > 'List'`

(*v*) `12 / 6 /`

7. (*a*) Write a Python program that takes a positive integer `n (n < 9)` as input from the user and produces

an n lines pattern as output. For example, when 5 is entered as the value of n, the output will be as follows : 5

```
55555
4444
333
22
1
```

(*b*) Give the output that will be produced on execution of the following code segment : 5

```
str1= 'We are learning python'
print(str1.split())
print(str1.capitalize())
print(str1.count('n'))
print(str1.swapcase())
print(str1.title())
```

P.T.O.

8. (*a*) Write a Python function `checkVowel(ch)` that accepts a character argument `ch`. The function `checkVowel` checks whether character `ch` is a vowel. The function `checkVowel` returns true if given character `ch` is a vowel, otherwise returns false. 5

(*b*) Write a segment of the Python code to find the sum of the `n` terms of the series given below. The input `n` is to be entered by the user at run time. 5

$$1 - 2 + 3 - 4 + 5 - 6 + \ldots + n$$

This question paper ...

Your Roll No. .....

Sl. No. of Ques. Paper	: 7193	J
Unique Paper Code	: 62343318	
Name of Paper	: Office Automation Tools	
Name of Course	: B.A. (Prog.) Computer Applications : SEC	
Semester	: III	
Duration	: 2 hours	
Maximum Marks	: 25	

Section A is compulsory.

Attempt any ***three*** *questions from Section B.*

Parts of a question must be answered together.

SECTION A Marks : 10

1. (a) What are the two types of Page Orientations available in any Word Processing Software?

   (b) Which among the following is **not** a valid font style in any Word Processing Software?

   (i) Bold (ii) Italic

   (iii) Regular (iv) Subscript

   (c) Which among the following is **not** a valid datatype in Spreadsheet?

   (i) Number (ii) Character

   (iii) Label (iv) Date/Time

P.T.O.

(d) How are data organized in Spreadsheets?

(i) Lines and Spaces

(ii) Layers and Planes

(iii) Rows and Columns

(iv) Height and Width

(e) In Spreadsheet, the shortcut Ctrl+Home takes you to :

(i) Beginning of Page (ii) Cell A1

(iii) Beginning of Row (iv) Cell 1A

(f) What cell in the same row comes after cell Z1?

(i) AA1 (ii) ZA1

(iii) Z2 (iv) A2

(g) What is the term given to intersection of a row and a column in Spreadsheet?

(h) Which function in Spreadsheet is used to find the number of numeric entries in a selection?

(i) Which of the following functions is used to find largest element?

(i) MAXIMUM(A1 : A3)

(ii) MAX(A1 : A3)

(iii) LARGEST(A1 : A3)

(iv) HIGHEST(A1 : A3)?

(j) What are Superscript, Subscript, strikethrough called?

Section B

2. What is Mail Merge? Explain in detail all the steps required to perform mail merge in any Word Processing Software. 5

3. (a) Explain two ways of creating a table having 3 rows and 2 columns in any Word Processing Software.

(b) What are the different types of alignments in any Word Processing Software. 5

4. (a) What is a Cell in context of Spreadsheets? Explain the various ways of addressing a cell giving example of each.

(b) What is advantage of using Pivot Table giving example? 5

5. Explain the following functions :

(a) IF

(b) AVERAGE

(c) COUNTIF

(d) SUM

(e) VLOOKUP 5

6. Consider this Spreadsheet to answer the following :

	A	B	C	D	E	F	G
1	Roll No.	Name	Marks1	Marks2	Sum	Percentage	Result
2	1	A	34	23			
3	2	B	23	45			
4	3	C	56	43			
5	4	D	78	56			
6	5	E	49	44			

Write the formula/function to :

(a) Calculate percentage in cell F2 (Marks are out of 100)

(b) Calculate result in cell G2, if pass criteria is 50%

P.T.O.

(c) Find result of student whose Roll No. is 4

(d) Write both formula and function to calculate sum of marks 1 and marks 2. 5

This question paper contains 8+2 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **2214**

Unique Paper Code : **62273506** **JC**

Name of the Paper : **Data Analysis (Skill Enhancement Course)**

Name of the Course : **B.A. (Programme) (CBCS)**

Semester : **V**

Duration : **3 Hours** Maximum Marks : **75**

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

Note :— Answers may be written *either* in English *or* in Hindi but the same medium should be used throughout the paper.

टिप्पणी :—इस प्रश्न-पत्र का उत्तर अंग्रेजी **या** हिन्दी किसी एक भाषा में दीजिए; लेकिन सभी उत्तरों का माध्यम एक ही होना चाहिए।

All questions carry equal marks (**15** marks each).

Attempt any *five* questions.

Use of simple calculator is allowed.

सभी प्रश्नों के अंक समान हैं (प्रत्येक **15** अंक)।

किन्हीं **पाँच** प्रश्नों के उत्तर दीजिये।

साधारण कैलकुलेटर का उपयोग किया जा सकता है।

P.T.O.

1 (*a*) Describe the various methods of collecting primary data and comment on their relative advantages.

(*b*) Define the following terms :

(*i*) Random sample

(*ii*) Histogram

(*iii*) Critical region

(*iv*) Probability density function. 5+10

(अ) प्राथमिक आँकड़ों के संग्रहण में विभिन्न विधियों का विवेचन कीजिये तथा इसके सापेक्षिक लाभों पर टिप्पणी कीजिये।

(ब) निम्नलिखित शब्दों का विश्लेषण कीजिये :

(*i*) दैव नमूना

(*ii*) हिस्टोग्राम

(*iii*) त्रुटिपूर्ण क्षेत्र

(*iv*) प्रायिकता घनत्व फलन।

2. (*a*) What are the advantages and disadvantages of Arithmetic Mean and Geometric Mean ?

(*b*) Find the missing frequency in the following frequency distribution, when it is known that Arithmetic mean = 11.09 and total number of observations is 60.

Class Limits	Frequency
9.3–9.7	2
9.8–10.2	5
10.3–10.7	X
10.8–11.2	Y
11.3–11.7	14
11.8–12.2	6

5+10

(अ) अंकगणितीय माध्य एवं ज्यामितीय माध्यम के गुण तथा अवगुण क्या हैं?

(ब) निम्न बारंबारता वितरण में लुप्त बारंबारता को ज्ञात कीजिये जब यह जाना जाता है कि अंकगणितीय माध्य = 11.09 तथा अवलोकनों की संख्या 60 है।

Class Limits	Frequency
9.3–9.7	2
9.8–10.2	5
10.3–10.7	X
10.8–11.2	Y
11.3–11.7	14
11.8–12.2	6

3. (*a*) What do you mean by index number ? State the uses of index number. 5+10

(*b*) Calculate Laspeyres' index using the following data. Does it satisfy the time reversal test ?

Commodities	Price (Rs.) 1979	Quantity 1979	Price (Rs.) 1980	Quantity 1980
Rice	32	50	30	50
Barley	30	35	25	40
Maize	16	55	18	50

(अ) निर्देशांक सूचकांक से आप क्या समझते हैं? निर्देशांक सूचकांक के उपयोग का विश्लेषण कीजिये।

(ब) निम्न आंकड़ों का उपयोग करते हुए लैस्पेरे सूचकांक की गणना कीजिये। क्या यह समय व्युत्क्रमण जाँच को संतुष्ट करता है ?

Commodities	Price (Rs.) 1979	Quantity 1979	Price (Rs.) 1980	Quantity 1980
Rice	32	50	30	50
Barley	30	35	25	40
Maize	16	55	18	50

4. (*a*) What do you understand by linear regression analysis and correlation analysis ? How do they differ ?

(*b*) Find the coefficient of correlation from the following data :

X	Y
65	68
63	66
67	68
64	65
68	67

P.T.O.

62	66
70	68
66	65

8+7

(अ) रेखीय प्रतीपगमन विश्लेषण एवं सहसंबंध विश्लेषण से आप क्या समझते हैं ? ये एक दूसरे से कैसे अलग हैं ?

(ब) निम्न आंकड़ों से सहसंबंध गुणांक की गणना कीजिये :

X	Y
65	68
63	66
67	68
64	65
68	67
62	66
70	68
66	65

5. (*a*) What do you understand by Dispersion ? Explain briefly the various methods used for measuring dispersion.

(*b*) The coefficients of variation of wages of male workers and female workers are 55 per cent and 70 per cent respectively, while the standard deviations are 22 and 15.4 respectively. Calculate the overall average wages of 100 workers given that 80 are male and 20 are female workers. 10+5

(अ) प्रसरण से आप क्या समझते हैं? प्रसरण की माप के लिए उपयोग की गई विभिन्न विधियों का संक्षेप में विवेचन कीजिये।

(ब) पुरुष मजदूर एवं महिला मजदूर के मजदूरी के वितरण का गुणांक क्रमश: 55 प्रतिशत तथा 70 प्रतिशत है, जबकि प्रमाप विचलन क्रमश: 22 तथा 15.4 है। 100 मजदूरों की कुल औसत मजदूरी ज्ञात कीजिये जबकि 80 पुरुष एवं 20 महिला मजदूर दिये गये हैं।

P.T.O.

6. (*a*) What is skewness ? Explain the main types of skewness curves.

(*b*) Find the First, Second, Third and Fourth moment about its original mean and arbitrary origin 4 for the set of numbers 2, 3, 7, 8, 10. 5+10

(अ) विषमता (skewness) क्या है? विषमता (skewness) वक्र के विभिन्न प्रकारों की व्याख्या कीजिये।

(ब) संख्याओं के समुच्चय 2, 3, 7, 8, 10 के लिए इसके मूल्य माध्य एवं काल्पनिक मूल 4 से प्रथम, दूसरा, तीसरा तथा चौथा आघूर्ण ज्ञात कीजिये।

7. (*a*) If the probability of a defective bolt is 0.2, find the mean and standard deviation of defective bolts in total of 900 bolts.

(*b*) (*i*) Explain the concept of conditional probability.

(*ii*) An insurance company insured 2,000 scooter drivers, 4,000 car drivers and 6,000 truck drivers. The probability of their insurance is 0.1, 0.3 and 0.2 respectively. One of the insured persons meets with an accident. What is the probability that he is a car driver ? (Using Bayes' Theorem) 9+6

(अ) यदि एक खराब बोल्ट की प्रायिकता 0.2 है, तो कुल 900 बोल्टों में से खराब बोल्टों के लिए माध्य तथा प्रमाप विचलन ज्ञात कीजिये।

(ब) (*i*) सशर्त प्रायिकता की अवधारणा की व्याख्या कीजिये।

(*ii*) एक बीमा कंपनी ने 2,000 स्कूटर ड्राइवर, 4,000 कार ड्राइवर तथा 6,000 ट्रक ड्राइवर को बीमा दिया। इनके बीमा की प्रायिकता क्रमशः 0.1, 0.3 तथा 0.2 है। बीमित व्यक्ति में से एक की दुर्घटना हो जाती है। क्या प्रायिकता है कि यह एक कार ड्राइवर है (बेज प्रमेय का उपयोग कीजिये।)

8. (*a*) (*i*) Define Binomial distribution.

(*ii*) Arithmetic mean and standard deviation of a binomial distribution are respectively 4 and $\sqrt{8/3}$. Find the values of n and p.

(*b*) A random variable X is defined as the sum of faces when a pair of dice is thrown. Obtain the probability distribution of the sum of the number on them. Find the expected value of X. 10+5

(अ) (*i*) द्विघाती वितरण को परिभाषित कीजिये।

(*ii*) एक द्विघाती वितरण का अंकगणितीय माध्य तथा प्रमाप विचलन क्रमशः 4 तथा $\sqrt{8/3}$ हैं। n तथा p का मूल्य ज्ञात कीजिये।

(ब) एक दैव चर X अभिमुख के योग के रूप में परिभाषित है जब पांसे का एक जोड़ा फेंका जाता है। उन पर संख्या के योग का प्रायिकता वितरण ज्ञात कीजिये। X का प्रत्याशित मूल्य ज्ञात कीजिये।

This question paper contains 4 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : 7216

Unique Paper Code : 62343502 J

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 the remaining five questions.

1. (*i*) GAMBAS responds to events using ..... 1×10

(*a*) a code procedure (*b*) an event procedure

(*c*) a form procedure (*d*) a property

P.T.O.

(*ii*) What value will be assigned to the numeric va when the following statement is executed ?

```
X = 2 + 3 * 4 ^2
```

(*a*) 10 (*b*) 146

(*c*) 50 (*d*) 400

(*iii*) Variable declaration is done using the ..... keyword.

(*a*) Var (*b*) Dim

(*c*) Declare (*d*) Static

(*iv*) Variables declared inside a procedure are have .....

(*a*) local scope (*b*) procedure-lev

(*c*) class-level scope (*d*) global scope

(*v*) Keywords are also referred to as :

(*a*) reserved words (*b*) variable nam

(*c*) constant name (*d*) user defined

(*vi*) .....tool allows drawing with free-hand

(*a*) Text (*b*) Lasso

(*c*) Fuzzy selection (*d*) Bucket fill

(vii) Shift + C is the shortcut to ..... an image in GIMP.

(a) duplicate (b) cut

(c) copy (d) crop

(viii) GIMP is covered by .....open source software license.

(a) GPL (b) LGPL

(c) Mozilla (d) BSD

(ix) .....is the file extension of a GIMP project file ?

(a) PSF (b) XCF

(c) XOF (d) PCF

(x) 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

2. (*a*) Highlight three features of MIT License. 3

(*b*) What do you understand by "generational limitation" principle in open source software licensing ? 2

3. (*a*) What do you mean by open source software ? 2

(*b*) Explain *three* disadvantages of open source software. 3

4. Explain *five* open source definitions propounded by Open Source Initiative. 5

5. (*a*) How is LGPL different from GPL ? 3

(*b*) Differentiate between Contributor and Licensor of an open source software. 2

6. (*a*) Explain three limitations of copyright. 3

(*b*) List *four* popular open source softwares with their application areas. 2

This question paper contains 4 printed pages]

41475

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : 7256

Unique Paper Code : 62345501 J

Name of the Paper : IT Fundamentals

Name of the Course : B.A. (Prog.) : Computer Application : G. E.

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*) Differentiate between guided and unguided transmission media. 4

(*b*) What are registers in a CPU ? Name any *two* registers. 3

(*c*) Differentiate between RAM and ROM. 3

P.T.O.

(*d*) Name any *four* pointing devices used to cor
a computer system.

(*e*) Explain different types of data transmissi
a suitable example.

(*f*) Define the following terms :

Web page, home page and website

(*g*) What do you mean by time sharing ope

(*h*) Differentiate between peer-to-peer an
network.

(*i*) What do you understand by a primary ke
management system ? Explain with
example.

Section B

2. (*a*) What do you mean by the cache mem
different levels of cache memory.

(*b*) Explain the various units of a Central P

3. (*a*) Differentiate between impact and non-impact printers w the help of *one* example each.

(*b*) What do you understand by URL ? Explain its structu

4. (*a*) Describe how the different types of memories a organized in the hierarchy in a computer system.

(*b*) Describe the basic organization of a computer system, a explain the functions of various units of a compu system.

5. (*a*) List and explain the different components of a datab management system.

(*b*) Describe any *five* benefits of database management syste

6. (*a*) Differentiate between :

(*i*) Download and upload

(*ii*) Online and offline

(*b*) Describe any *three* applications of Internet.

7. (*a*) List and explain any *five* functions of an operat system.

(*b*) Write short notes on :

(*i*) Real-time operating system

(*ii*) Scanners 5

8. (*a*) What is data communication system ? Explain its components. 7

(*b*) List and explain the different types of browsers with the help of suitable example used in internet 3