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

Python keyword.

(*i*) `class`

(*ii*) `not`

(*iii*) `if`

(*iv*) `exec`

(*b*) How does the effect of the following two state

differ ?

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

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

(*c*) Give the output that will be produced on executi

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 executio the following code segment :

```
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 integer value `x` and find factors of `x`.

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

```
list1 = [1.32, 2.45, 6.13, 3.65, 8.42, 5.2
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.

(*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 :

`[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[0] = '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)
```


P.T.O.

6. (*a*) Consider a stack `s` of integers that is initially
Perform the following operations in sequence
stack `s` and show the modified stack `s` (u
diagram) after each of the following operation

(*i*) push 18

(*ii*) pop

(*iii*) push 7

(*iv*) push 5

(*v*) pop.

(*b*) Evaluate the following expressions :

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

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

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

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

(*v*) `12 / 6 /`

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

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)` tha a character argument `ch`. The function `chec` checks whether character `ch` is a vowel. The `checkVowel` returns true if given character vowel, otherwise returns false.

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

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