

Dr. B. C. Roy College of Pharmacy & AHS, Durgapur

Course name: Basic Programming with Python and its Application in Database Management, artificial intelligence and machine learning (AI/ML)

Exam Date: 19.09.2024

FM: 50

Time: 1 hr

(A) Answer any 8 questions (each contains 5 marks)

- (a) How will you import Pandas and Numpy in Jupyter Notebook (write the commands only)?
(b) $ls=[1,2,3,4,5,6]$, convert this list to a Numpy array with a command and save that array as `a`. Remove the first element from this array and save as `new_a`. Convert `new_a` to a list named `new_ls`. $2+3$
- (a) There is a .csv file named 'sample.csv' with numbers that looks like:

A
34
9
12
11
7

Import this .csv file as Numpy array and save as `csv_array`.

- (b) $ls=[4,5,6,7]$. Convert this to a Numpy array, save as `a` and change this to `new_ls` that will look like $[16,25,36,49]$ (final output will be as a list). $2+3$
- (a) $A=[1,2,3,4]$ and $B=[5,6,7,8]$. Convert both these lists to two Numpy arrays and save as `nA` and `nB`. What will `nA+nB`, `nA-nB` and `nA*nB` look like?
(b) Name `nA+nB` as `newAB`. `newAB+3=?` `newAB*3=?` `newAB[newAB>5]=?`
 $2+3=5$
- Convert the following list of lists to a Numpy array and save as `A`. What will be `A[0]`, `A[2,1]`, `A[:,0]`, `A[0,0:3]` and `A[1,:]`?
 $ls=[[32, 15, 6, 9, 14], [12, 10, 5, 23, 1], [2, 16, 13, 40, 37]]$
 5
- $ls=[1,2,3,4,5,6]$. How will you determine maximum, minimum, mean, median, mode and standard deviation from this list with Numpy?
 5
- How will you import Pandas in Jupyter Notebook (write the commands only)? Convert the following dictionary to a Pandas dataframe (named as `df`) using a command.
`dic={'Column_1':[1,2,3], 'Column_2':[4,5,6], 'Column_3':[7,8,9]}`
Write a command that will remove 'Column_3' from the dataframe and save the new dataframe as `newdf`.
 $1+2+2=5$
- Write different commands to import a 'comma-separated', 'tab-separated', 'semicolon-separated' and 'space-separated' files named 'sample.csv' with Pandas. Save these files as `cdf`, `tdf`, `sdf` and `scdf`. Now save the `cdf` file as a new file named 'newSample.csv' without index.
 5
- (a) A dataframe named 'df' contains 25 rows and 3 columns. What will be the output from `df.shape` command?
(b) A dataframe named 'df' looks like:

City	Population	Median Age
Maplewood	100000	40
Wayne	350000	33
Forrest Hills	300000	35
Paramus	400000	55
Hackensack	290000	39

Write a command to check its column names. Write a column to sort the values under 'Population' column in ascending order. Write another column to sort the values under 'Median Age' in descending order. Insert a column named 'New_column' with all values a 0.

1+4

9. Suppose you have a Pandas dataframe named 'df' that looks like the following:

	Column_1	Column_2	Column_3
0	1	4	7
1	2	5	8
2	3	6	9

Write the following outputs.

- df.loc[0:1]
- df.iloc[:,:]
- df.iloc[:,1:2]
- df.iloc[1:2,:]
- df.iloc[0,0]

5

10. How will you import Multilayer Perceptron (MLP) classification analyses module from Scikit-learn. Suppose you have a dataframe named df. Write the command to divide this to a training set (80%) and a test set (20%) with Scikit-learn keeping random seed value of 42. Given that the response variable is Y and dependent variables as X, which command(s) will you will you fit these with MLP classification model (using default values).

1+2+2=5

(B) Answer any one question

- What is Perceptron. Diagrammatically represent a Perceptron. What do you mean by Inputs, Weights and Output. 2+2+6=10
- Write short note on various types of machine learning techniques. 10

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Course Name : Basic Programming with Python and its application in database management, artificial intelligence and machine learning(AI/ML).

Exam Date : 29/01/2024

F.M : 60

Time : 1.30 Hrs

General Instructions : Question paper contains three groups A, B and C. Group A contains MCQ type questions with 1 marks each. Group B contains short answer type questions with 3 marks each and in Group C, you have to write Python program , carries 5 marks each.

A. choose the most appropriate answer from the options given below


1. Which type of Programming does Python support?
a) object-oriented programming b) structured programming
c) functional programming d) all of the mentioned
2. Is Python case sensitive when dealing with identifiers?
a) no b) yes c) machine dependent d) none of the mentioned
3. Is Python code compiled or interpreted?
a) Python code is both compiled and interpreted
b) Python code is neither compiled nor interpreted
c) Python code is only compiled
d) Python code is only interpreted
4. What will be the value of the following Python expression?
 $4 + 3 \% 5$
a) 7 b) 2 c) 4 d) 1
5. Which of the following is used to define a block of code in Python language?
a) Indentation b) Key c) Brackets d) All of the mentioned
6. Which of the following character is used to give single-line comments in Python?
a) // b) # c) ! d) /*
7. What are the values of the following Python expressions?
 $2^{(3^2)}$
 $(2^3)^2$
 2^{3^2}
a) 512, 64, 512 b) 512, 512, 512 c) 64, 512, 64 d) 64, 64, 64

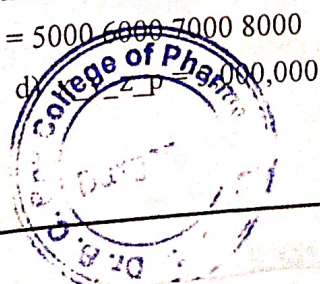
8. What will be the output of the following code snippet?

```
a = 3  
b = 1  
print(a, b)  
a, b = b, a  
print(a, b)
```


a) 3 1 1 3 b) 1 3 3 1 c) 1 1 3 3 d) none of these

9. Which of the following declarations is incorrect in python language?
a) `xyzp = 5000000` b) `x y z p = 5000 6000 7000 8000`
c) `x,y,z,p = 5000, 6000, 7000, 8000` d) `x,y,z,p = 5000, 6000, 7000, 8000`


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19. `print("jayspoint"[:5])`
 What will be the output of this code?
 a) jayspoint b) jaya c) point d) None of these

21. `a = True`
`b = False`
`c = False`
`if a or b and c:`
 `print("ABC")`
`else:`
 `print("abc")`
 a) abc b) ABC c) ABC abc d) abc ABC

22. Which of the following is the truncation division operator in Python?
 a) / b) // c) / d) %

23. What will be the output:
`a = 10`
`b = 20`
`c = 30`
`print(c)`
 a) 30 b) 1020 c) 2010 d) none of these

24. How many times will Python execute the code inside the following while loop?
`i = 1`
`while i < 1 and i > 2:`
 `print("Hello")`
`i = i + 1`
 a) 0 times b) 1 times c) 2 times d) infinite times

25. Extension of python file is:
 a) python b) py c) prog d) None of these

26. Answer the following questions

- Write the difference between:
 (a) `and` and `==` (b) `and` and `or` (c) `/` and `//` (d) `*` and `**`
- Convert the following for loop into while loop
`for i in range(20, 50):`
 `print(i)`
- What is the significance of `return` in loop explain with example.
- How many return statement can be used in a function? Explain with example.
- Explain actual and formal arguments with example.
- Write Python code to create a Dictionary and display the length of the dictionary.

7. What is the output of the following?

```
i = 1
while True:
    if i%2 == 0:
        break
    print(i)
    i = i + 1
```

- a) 1 2 3 4 5 6 b) 1 2 3 4 5 6 7 c) error d) none of the mentioned

8. What will be the output if value of a is 5

```
def sum(a):
    a = a + 10
    print(a)
```

```
a = int(input("Enter a number: "))
sum(a)
print(a)
```

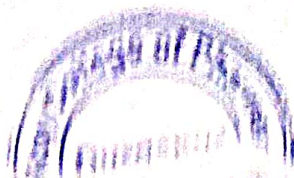
9. Write python code to input a string and print the first and last character of it.

10. What will be the output?

```
try:
    1/0
except:
    print("Finally finished")
```

11. Write python program for the following:

- Cost of an apple is Rs. 10 and Mango is Rs. 8. You have purchased m and n number of Apples and Mangos. You will get a discount of 2% if your purchase amount is more than Rs. 5000. Write a program to input the values of m and n and display the purchase amount, discount and net payable amount.
- Input any 10 numbers in a list and display the maximum element.
- Display the sum of all the numbers between 1 to 100 which are divisible by both 3 and 7.



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