Name:

Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: Interactive Programming through Python (CSEG 398)
Semester: V
Programme: B.Tech (IOT,ECRA,OGI,MC)
Time: 03 hrs. **Max. Marks: 100**
Instructions: Attempt all questions

SECTION A

S. No.		Marks	CO
Q1.	Explain use of **, /, // and **in** operators in python	**4**	**CO1**
Q2.	Describe various types of arguments used in the functions.	**4**	**CO1**
Q3.	Why python does not supports overloading concept. Justify your answer with an example.	**4**	**CO2**
Q4.	**Explain** any **four** keywords used in Exception handling in python.	**4**	**CO1**

Q5.	`def mod(l):`
	`  print(l)`
	`  l.append('four')`
	`  print(l)`
	
	`l = ['one', 'two', 'three']`
	`print(l)`
	`mod(l)`
	`print(l)`
	Find the output of the above program [2]
	
	True/False.
	a. If the object passed to a function is of immutable type, the passing acts like pass by value.
	b. If the object passed to a function is of mutable type, the passing acts like pass by reference.
		4	**CO2**

SECTION B

Q6.	Create database connectivity with python and perform the queries given below in a single file. a. Create database connection b. Create a table named **student_info** with the following fields (name, SAP_ID, address, Date_of_birth) c. Insert records of three students into the **student_info** table	**10**	**CO4**

	d. Select students whose name starts with H from **student_info** table e. Sort the **name** field in descending order.		
Q7.	Assume a file city.txt with details of 5 cities in given format (cityname population(in lakhs) area(in sq KM)): Example: Dehradun 5.78 308.20 Delhi 190 1484 …… Open file city.txt and read to: a. Display details of all cities b. Display city names with population more than 10Lakhs c. Display sum of areas of all cities	**10**	**CO3**

Q8.	Answer following questions:
	a. Convert **numbers =[1, 2.0, 3]** to numpy array and convert all elements to string type.
	b. Create a 2 D array through list and set dtype as int32
	c. Find the rows and columns of the 2d array created in part b
	d. Write the output of: np.arange(16).reshape(2,2,4)
	e. Write the output of : np.randon.randint(1,100,10)
	OR
	Refer the code and find the output:
	`a = np.array( [20,30,40,50] )`
	`b = np.arange( 1,5)`
	`print(a)`
	`print(b)`
	a. Find a & b from the above code.
	b. Perform a+b, a-b, a*b and find the output.
	c. Find output of a<35
	d. Which method is used to perform matrix multiplication using numpy?
	e. If a= [[0, 1, 2, 3],
	[4, 5, 6, 7],
	[8, 9, 10, 11]]
	Find a.min(axis=1)
		10	**CO5**

Q9.	Take one example and write python code to discuss the importance of synchronization in threads.	**10**	**CO1**
	SECTION-C		
Q10.	Refer given csv file and answer given questions:		**CO5**

	EST	Temperature	DewPoint	Humidity	Sea Level PressureIn	VisibilityMiles	WindSpeedMPH	PrecipitationIn	CloudCover	Events	WindDirDegrees
0	1/1/2016	38	23	52	30.03	10	8.0	0	5	NaN	281
1	1/2/2016	36	18	46	30.02	10	7.0	0	3	NaN	275
2	1/3/2016	40	21	47	29.86	10	8.0	0	1	NaN	277
3	1/4/2016	25	9	44	30.05	10	9.0	0	3	NaN	345
4	1/5/2016	20	-3	41	30.57	10	5.0	0	0	NaN	333
5	1/6/2016	33	4	35	30.50	10	4.0	0	0	NaN	259
6	1/7/2016	39	11	33	30.28	10	2.0	0	3	NaN	293
7	1/8/2016	39	29	64	30.20	10	4.0	0	8	NaN	79
8	1/9/2016	44	38	77	30.16	9	8.0	T	8	Rain	76
9	1/10/2016	50	46	71	29.59	4	NaN	1.8	7	Rain	109
10	1/11/2016	33	8	37	29.92	10	NaN	0	1	NaN	289

20

a. Import the given csv file using pandas. (File name is weather.csv)
b. Find maximum temperature.
c. Find average WindSpeed.
d. Retrieve Date when the **Events** was "**rain**"
e. Find number of rows and columns present in the file.
f. Print **Humidity** and **Events** columns from the file.
g. Find all the rows where temperature is greater than 32.
h. Change the index to date on which temperature recorded.
i. Print the **temperature** and **day** on which the temperature was **maximum.**
j. Fill NAN values present in the **temperature** column with **0** and fill NAN value present in **Events** column with "**no event**".

Q11.

a. Write a function, which takes list of integer values, and returns cube of each element in list.

e.g. input=[2,3,5,1,4] expected output: [8,27,125,1,64]

b. Can you store the details of multiple books in a dictionary at the same time? Details include- book_id, book_name , price & year . Give example to support your answer.

c. Suggest suitable structure for storing the above details of 5 books and print book_name & year, number of books with price>=150.

d. Write a function, which takes structure, taken in answer of (c), as argument and returns total price of all books.

OR

The "Variety Retail Store" sells different varieties of Furniture to the customers. The list of furniture available with its respective cost is given below:

Furniture	Sofa set	Dining table	T.V. Stand	Cupboard
Cost in Rs.	20,000	8,500	4,599	13,920

The furniture and its corresponding cost should be stored as a list. A customer can order any furniture in any quantity (the name and quantity of the furniture will be

20 **CO2**

	provided). If the required furniture is available in the furniture list (given above) and quantity to be purchased is greater than zero, then bill amount should be calculated. In case of invalid values for furniture required by the customer and quantity to be purchased, display appropriate error message and consider bill amount to be 0. Initialize required furniture and quantity with different values and test the results. Write a Python program to calculate and display the bill amount to be paid by the customer based on the furniture bought and quantity purchased.		

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SECTION A

S. No.		**Marks**	
Q1.	When the else part of try-except-else be executed? [2] Why the code given below will not compile, give justification. [2] try: print("Hello world!") except: print('Error occured') except(TypeError): print("Invalid Datatype") except(ValueError): print("Invalid Value") finally: print("Last block")	**4**	**CO1**
Q2.	Differentiate mutable and immutable datatypes with help of examples.	**4**	**CO2**
Q3.	Explain different types of inheritance in class with example.	**4**	**CO1**
Q4.	Explain python lambda functions with the help of an example.	**4**	**CO2**
Q5.	Explain the concept of overloading and overriding in python with the help of examples.	**4**	**CO1**
	SECTION B		
Q6.	Create database connectivity with python and perform the queries given below in a single file. a. Create database connection. b. Create a table named **employee_info** with the following fields (emp_name,	**10**	**CO4**

<table>
<tr><td></td><td>EMP_ID, address, Date_of_joining and salary)
c. Insert record of five employees into the table.
d. Select employee whose salary is greater than 25000 from the employee_info table.
e. Select employee whose name starts with G and Date_of_joining after july 2018.</td><td></td><td></td></tr>
<tr><td>Q7.</td><td>a. Create a file student.txt and insert details of 5 students in given format (student_name Roll_no Marks)
Example:
Ram 10 72
Shyam 20 55
……
Open file student.txt and find average marks of 5 students stored in the file.</td><td>10</td><td>CO3</td></tr>
<tr><td>Q8.</td><td>Refer the code and find the output:
<pre>a = np.array([20,30,40,50])
b = np.arange(1,5)
print(a)
print(b)</pre>a. Find a & b from the above code.
b. Perform a+b, a-b, a*b and find the output.
c. Find output of a<35
d. Which method is used to perform matrix multiplication using numpy?
e. If a= [[0, 1, 2, 3],
[4, 5, 6, 7],
[8, 9, 10, 11]]

Find a.min(axis=1)</td><td>10</td><td>CO5</td></tr>
<tr><td>Q9.</td><td>Take one example and write python code to discuss the importance of synchronization in threads.
OR
Write a program that takes a string with multiple words and then capitalizes the first letter of each word and forms a new string out of it.</td><td>10</td><td>CO1</td></tr>
<tr><td colspan="4">SECTION-C</td></tr>
<tr><td>Q10.</td><td>Refer the given excel file and perform various operations:</td><td></td><td></td></tr>
<tr><td></td><td><table>
<tr><td>0</td><td>GOOGL</td><td>27.82</td><td>87</td><td>845</td><td>larry page</td></tr>
<tr><td>1</td><td>WMT</td><td>4.61</td><td>484</td><td>65</td><td>n.a.</td></tr>
<tr><td>2</td><td>MSFT</td><td>-1</td><td>85</td><td>64</td><td>bill gates</td></tr>
<tr><td>3</td><td>RIL</td><td>not available</td><td>50</td><td>1023</td><td>mukesh ambani</td></tr>
<tr><td>4</td><td>TATA</td><td>5.6</td><td>-1</td><td>n.a.</td><td>ratan tata</td></tr>
</table></td><td>20</td><td>CO5</td></tr>
</table>

	a. Read the above **excel** file in python. **b.** How do I write this file to a new file "**new.csv"?** **c.** Include column names in this file. Use **'ticker', 'eps', 'revenue', 'price', 'people'** as column names. **d.** Convert all **not available** or **n.a.** values to NAN and also convert negative revenues to NAN because revenues can never be negative. **e.** Fill NAN values using a suitable approach. **f.** Write a function to change n.a value appearing in WMT to **Sam Walton**.		
Q11.	Create four Employees with following properties: First name, last name, employee code, monthly_pay and email id where email id is a combination of firstname, lastname and xyz.com. [Example: firstname.lastname @xyz.com] The finance department of a company wants to compute the monthly pay of its employees. Monthly pay is calculated as mentioned in the formula below. • Monthly Pay = Number of hours worked in a week * Pay rate per hour * No. of weeks in a month • The number of hours worked by the employee in a week should be considered as 40 • Pay rate per hour should be considered as Rs.400 • Number of weeks in a month should be considered as 5 Create three methods display_info() to display employee information, monthly_pay() to display monthly income of employee, apply_raise() to display the increased salary. Every year a raise is given to each employee in his/her salary. However, the raise amount varies every year but is equal for all the employees. Write a Python program to implement the above real world problem. Also, find total number of employees exists in the organization. **OR** Given below is a dictionary 'customer_details' representing customer details from a Retail Application. Customer Id is the key and Customer Name is the value. **customer_details = { 1001 : "John", 1004 : "Jill", 1005: "Joe", 1003 : "Jack" }** Write Python code to perform the operations mentioned below: a) Print details of customers. b) Print number of customers. c) Print customer names in ascending order. d) Delete the details of customer with customer id = 1005 and print updated dictionary. e) Update the name of customer with customer id = 1003 to "Mary" and print updated dictionary.	**20**	**CO1**