KENDRIYA VIDYALAYA SANGATHAN GUWAHATI REGION	
HALF YEARLY EXAMINATION 2019-20	

SET: 1	CLASS :XII	SUB : INFORMATICS PRACTICES	TIME: 3 Hrs	M.M : 70

General Instruction: - *All Questions Are compulsory. Internal choices are given in some questions.*

1. *Programming language used is python . Use appropriate variable names.*
2. *Please check that this question paper contains 3 printed pages.*
3. *Please check that this question paper contains 7 questions.*
4. *Please write down the serial number of the question before attempting it.*
5. *Indent your program appropriately.*

Q1	a.	What is the difference between pivot() and pivot_table() functions in pandas.	2
	b.	For the given dataframedf, write a python statement to sort the dataframe on the ascending order of points:	2
	c.	For the given DatafFrame**df**what will be the output of the following statement:	2
		df_desc = df.sort_values('physics', ascending=False)	
	d..	What will be the output for the given code: import pandas as pd df = pd.DataFrame([[1, 2, 3], [4, 5, 6], [7, 8, 9]],columns=['A', 'B', 'C']) print(df.agg("sum", axis="rows"))	2
	e.	What is the need for the pipe() method in pandas? Write a pipe statement to combine the following statements. p= df.groupby('Hobby') k = p.get_group('Dance')	3

For Q1 b., the DataFrame shown:

	House	Year	Points
0	Raman	2010	500
1	Tagore	2010	600
2	Raman	2011	300
3	Tagore	2011	400
4	Ashok	2010	500

For Q1 c., the DataFrame shown:

	rollno	name	physics	chem
0	101	Pat	90	75
1	101	Sid	40	80
2	103	Tom	50	60
3	102	Kim	90	85
4	104	Ray	65	60

		m = k['score'].agg('max')	
Q2	a.	What is the difference between Median and Mode in descriptive statistics?	2
	b.	What is variance in statistics? What will be the output of the given python code? import pandas as pd s = pd.Series([4,2,6,3,9]) v = s.var() print(v)	2
	b.	predict the output of the following code: import pandas as pd d1 = {'rollno':[101,101,103,102,104], 'name': ['Pat','Sid','Tom','Kim','Ray'],\ 'physics':[90,40,50,90,65],'chem':[75,80,60,85,60] } df = pd.DataFrame(d1) print(df) print('--------Basic aggregate functuions min(), max(), sum() and mean()') print('minimum is:',df['physics'].min()) print('maximum is:',df['physics'].max()) print('sum is:',df['physics'].sum()) print('average is:',df['physics'].mean())	2
	c.	For the given python code what will be the output. import pandas as pd df = pd.DataFrame([[1, 2, 3], [4, 5, 6], [7, 8, 9]],columns=['A', 'B', 'C']) dtf1=df.agg("mean", axis="columns") print(dtf1)	2
	d.	Write a python program in numpy to join a pair of matrices at the rows. Eg: For given arrays arr1 and arr2 arr1 = [[4, 3, 2], [1, 7, 8]] arr2 = [5, 6, 7] the resultant array arr3 should be arr3 = [[4, 3, 2], [1, 7, 8], [5, 6, 7]]	2
Q3.	a.	What do you understand by a cumulative histogram?	1

	b.	Write a python program to create a bar chart with the following information:
		
		Country / Population table:
		China 150
		India 140
		USA 55
		Russia 40
		England 60
		
		The bar chart should have the following features:
		  i) The Title should be 'World Population Stats'
		  ii) The X axis label should be Countries
		  iii) The Y axis label should be Population
		  iv) The bars should have the colour Red
			4

For Q3 b., the table:

Country	Population
China	150
India	140
USA	55
Russia	40
England	60

	c.	Which type of plot is best suited to describe the correlation between two variables?	1
	d.	Draw a sample box plot and label its components.	2
	e.	What are sprints in Scrum? How a sprint ends?	2
Q4.	a.	Write a python statement to create a NumPy array to hold 10 numbers between 10 to 100, including 100.	2
	b.	In linear regression which method is used to train the model with test data?	1
	c.	what is the output of following code ? import numpy as np a = np.array([[1,2],[3,4]], dtype=np.int32) b = np.array([[5,6],[7,8]], dtype=np.int32) print(np.add(a,b)) print(a+b)	2
	d.	What is the output of the following code? import numpy as np a = np.array([[6,5,4],[3,4,5],[1,2,3]], dtype=np.int32) print(np.sum(a, axis=0)) print(np.sum(a, axis=1))	2
Q5.	a.	What is software engineering? Mention two reasons for the need of Software Engineering.	2
	b.	What is the purpose of re-indexing in python pandas. Explain with example?	2
	c.	Name the two software delivery models? Which of these is best suited for large-scale system development.	2
	d.	What will be the output of the following python code: import numpy as np a = np.array([[6,5,4],[3,4,5],[1,2,3]], dtype=np.int32) print(np.sum(a, axis=1))	2
	e.	Write python code to create a 4 cross 4 identity matrix.	2
Q6	a.	Mention the any four guidelines for Agile Method.	2
	b.	Mention two advantages of Pair programming.	2
	c.	Mention two features of GIT.	2
	d.	What do you understand by feasibility study in Software specification? Mention two areas in which feasibility study needs to be done.	2
	e.	Draw a labeled diagram of Waterfall model.	3
Q7	a.	Mention two advantages of Waterfall model.	2
	b.	Mention two advantages of Incremental delivery model.	2
	c.	Mention two drawbacks of Pair programming.	2
	d.	What is a Business Use Case Diagram? Mention two components of a Business Use Case Diagram	3
	e.	Draw Business Use Case diagram to depict include relationship.	2
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