KENDRIYA VIDYALAYAS- CHENNAI REGION PREBOARD EXMINATION -2019-20

CLASS : XII

SUBJECT: INFORMATICS PRACTICES

		ANSWER KEY	
		SECTION-A	
1	a)	Find the output of following program. import numpy as np a=np.array([30,60,70,30,10,86,45]) print(a[-2:6])	1
		Ans: [86] 1 mark for the correct output	
	b)	x=np.array([1,2,3]) y=np.array([3,2,1]) z=np.concatenate([x,y]) print(z)	1
		1 mark for the correct answer	
	c)	Mr. Shiv wants to plot a scatter chart for the given set of values of subject on x-axis and number of students who opted for that subject on y-axis. Complete the code to perform the following : (i) To plot the scatter chart in statement 1 (ii) To display the scatter chart in statement 2 import matplotlib.pyplot as plt x=['Hindi', 'English', 'Math', 'Science', 'SST'] y=[10,20,30,40,50] statement 1 statement 2 Ans: plt.scatter(x,y) plt.show() (1/2 mark for each correct line of the answer)	1
		OR	
		MrAjay wants to plot a horizontal bar graph of the above given set of values with programming language on x axis and its popularity on y axis with following code. importmatplotlib.pyplotasplt x =['Java','Python','PHP','JS','C#','C++'] popularity =[22.2,17.6,8.8,8,7.7,6.7] Statement 1 plt.xlabel("Popularity") plt.ylabel("Languages") plt.show()	
		Complete the code by writing statement1 to print the horizontal bar graph with colour green	
		Ans: plt.barh(x, popularity, color='green') 1 mark for the correct answer	
L	1		i

d)	Suppose you want to join train and test dataset (both are two numpy arrays train_set and test_set) into a resulting array (resulting_set) to do data processing on it simultaneously. This is as follows:						
	train set = np.a	arrav([1, 2, 3])					
	test_set = np.array([[0, 1, 2], [1, 2, 3]])						
	resulting_set	> [[1, 2, 3], [0, 1, 2], [1, 2, 3]]				
	How would you join the two arrays?						
	Anc: resulting set = np.ystack/[train_set_test_set])						
	2 marks for the correct output with syntax						
		correct output wit					
 e)	Create a horizo	ntal bar graph of f	ollowing data. Add suitable labels.	2			
	City	Population					
	Delhi	23456123					
	Mumbai	20083104					
	Bangalore	18456123					
	Hyderabad	13411093					
	_						
	Ans:						
	import numpy a	as np					
	Cition=[[Dolbi?]]	lib.pyplot as pit	a' illudorobod'i				
	Population=[23	19101110a1 , Darigaloi 156122 20082101	e, nyuerabau j 18456123 13411093]				
	nlt harh(Cities F	430123,20083104, Population)	10450125,15411055]				
	plt. vlabel('Citie	s')					
	plt.xlabel('Popu	lation')					
	plt.show()	,					
	1/2 mark for lists	, ½ mark for barh()	function , ½ mark for labels , ½ mark for show()				
f)	Write a Pandas	program to conve	rt a NumPy array to a Pandas series	2			
	A.m.c.						
	import numpy a	oc nn					
	import numpy a	as nd					
	np arrav = np.a	rrav([10, 20, 30, 40), 50])				
	print("NumPy a	rray:")	,, 1,				
	print(np_array)						
	new_series = po	d.Series(np_array)					
	print("Converte	d Pandas series:")					
	print(new_serie	s)					
-)	2 marks for the	correct code / exa	mple code snippet	2			
g)	vvrite a NumPy	program to create	e a zu array with 1 on the border and U inside.	3			
	Original array						
	[[1. 1. 1. 1 1]						

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		[1. 1. 1. 1.] [1. 1. 1. 1.] [1. 1. 1. 1.] [1. 1. 1. 1.]]	
		1 on the horder and 0 inside in the array	
		[1. 1. 1. 1. 1.]]	
		Ans:	
		import numpy as np	
		x = np.ones((5,5))	
		print("Original array:")	
		print(x)	
		print("1 on the border and 0 inside in the array")	
		x[1:-1,1:-1] = 0	
		print(x)	
		3mark : 1 mark for creating array , 2 marks for extracting	
2	a)	function applies the passed function on each individual data element of the	1
		dataframe.	
		i) apply() ii) applymap() iii) pivot() iv) pivot_table()	
		Ans: applyman()	
		1 mark for the correct answer	
	h)	A dictionary smarks contains the following data:	1
	ν,	Smarks={'name'·['rashmi' 'harsh' 'nriva'] 'grade'·['A1' 'A2' 'B1']}	-
		Write a statement to create DataFrame called df. Assume that pandas has been imported as pd.	
		Ans:	
		import pandas as pd	
		Smarks={'name':['rashmi','harsh','priya'],'grade':['A1','A2','B1']}	
		df=pd.DataFrame(Smarks)	
		print(df)	
		1 mark for correct answer	
		OR	
		In pandas S is a series with the following result:	
		S=pd.Series([5,10,15,20,25])	
		The series object is automatically indexed as 0,1,2,3,4. Write a statement to assign the series as	
		a,b,c,d,e index explicitly.columns.	
		Ans:	
		import pandas as pd	
		S=pd.Series([5,10,15,20,25],index=['a','b','c','d','e'])	

	print(S)						
	1 mark for correct answer						
C)	Which function is used to generate a quartile in python?	1					
	Ans:						
	1 mark for correct answer						
d)	Write python statement to delete the 3 rd and 5 th rows from dataframedf.	1					
	Ans:						
	df.drop([2,4])						
	1 mark for correct answer						
e)	what is the use of pipe() in python pandas? Give example.	2					
	AIIS.						
	library functions. Any example.						
	1 mark for correct definition						
	1 mark for correct example						
f)	Write python statements to create a data frame for the following data.	2					
	Name Age Designation						
	RAJIV 20 CLERK						
	SAMEER 35 MANAGER						
	KAPIL 45 ACCOUNTANT						
	Ans:						
	$d = \{1, N = M \in \mathbb{N} \mid N \mid N \in \mathbb{N} \mid N \in \mathbb{N} \mid N \in \mathbb{N} \mid N \in \mathbb{N} \mid N \in $						
	'Age':[20.35.45].'Designation':['CLERK'.'MANAGER'.'ACCOUNTANT']}						
	df=pd.DataFrame(d)						
	print(df)						
	1/2 mark for importing pandas, 1 mark for creating dictionary , 1/2 mark for using DataFrame function						
g)	A dataframe df1 is given with following data:	3					
	NameEnglish Accounts Economics Bst IP						
	Aashna 87.0 76.0 82.0 72.0 78.0						
	Simran 64.0 /6.0 69.0 56.0 /5.0						
	$\begin{array}{c} \text{Jack} & \text{Jobs} 0 \ 08.0 \ 78.0 \ 05.0 \ 02.0 \\ \text{Ragbu} & 74.0 \ 72.0 \ 67.0 \ 64.0 \ 86.0 \\ \end{array}$						
	Somva 87.0 82.0 78.0 66.0 67.0						
	Ronald 78.0 68.0 68.0 71.0 71.0						
	Write the command to given an increment of 5% to all students to DataFrame df1 using						
	applymap() function.						
	Ans:						
	def increase5(x):						
	return x + x*0.05						
	df1.applymap(increase5)						
	Or						

h)	Consider the data frame dfC = pd.DataFrame({'Student Name' : ['TANVI GUPTA', 'MRIDUL KOHLI', 'DHRUV TYAGI', 'SAUMYA PANDEY', 'ALEN RUJIS', 'MANALI SOVANI', 'AAKASH IRENGBAM', 'SHIVAM BHATIA'], 'Height' : [60.0, 62.9, np.nan, 58.3, 62.5, 58.4, 63.7, 61.4], 'Weight' : [54.3, 56.8, 60.4, 58.3, np.nan, 57.4, 58.3, 55.8]} (i) Count the number of non-null value across the column for DataFramedfC. (ii) Find the most repeated value for a specific column 'Weight' of DataFramedfC. (iii) Find the median of hieght and weight column for all students using DataFramedfC Ans: (i) dfC.count(axis='columns') (ii) dfC['Weight'].mode() (iii) dfC.loc[:, ['Height', 'Weight']].mean()							4GI', 56.8, 60.4, ℃	3
11)		UIUWIII	g uata frame	of automobile					Э
					wheel-	num-of-			
		index	company	body-style	base	cylinders	price		
	-	0	bmw	sedan	101.2	four	16925		
	-	1	bmw	sedan	101.2	six	20970		
		2	honda	sedan	96.5	four	12945		
		3	honda	sedan	96.5	four	10345		
		4	toyota	hatchback	95.7	four	5348		
		5	toyota	hatchback	95.7	four	6338		
	 (i) From the given data set print first and last five rows (ii) Find the most expensive car company name (iii) Sort all cars by price columns Ans: (i) df.head(5) df.tail(5) (ii) df = df [['company', 'price']][df.price==df['price'].max()] (iii) carsDf = df.sort_values(by=['price', 'horsepower'], ascending=False) 								
i)	A dataframedf	B is give	en with follow	wing data:					4
	ItemnoltemNa 1 Ball Pe 2 Pencil 3 Ball Pe 4 Gel Pe 5 Noteb 6 Ball Pe	ime Colo en Bla en Gro n Gro ook Re en Gro	or Price ock 15.0 ue 5.5 een 10.5 een 11.0 d 15.5 een 11.5						
	7 Highlig	gher Bl	ue 8.5						1

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9 P Marker Blue 8.6 10 Pencil Green 11.5 11 Ball Pen Green 10.5 Answer the following questions (a) Display Color and corresponding item name. (b) Find the maximum price of each ItemName. (c) Tind the numbur price of each ItemName. (c) Out the number of items in each ItemName. (d) Count the number of items in each ItemName. (d) Count the number of items in each ItemName. (d) Count the number of items in each ItemName. (d) Count the number of items in each ItemName. (d) Count the number of items in each ItemName. (d) Count the number of items in each ItemName. (d) Count the number of items in each ItemName. (d) Count the number of items in each ItemName. (d) Count the number of items in each ItemName. (d) GB groupby(ItemName)!/Color)! apply(dfB.count()) 1 mark for each correct answer 1 mark for each correct answer 1 mark for each correct answer 1 3 a) What is the simplest model of software development paradigm? 1 (i) Spiral model (ii) 1 (ii) Big Bang model 1 1 (iii) Vir Materfall model 1 1 Strum event is divided into how many parts?			8 Gel Pe	en Red	12.5	
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(ii) Big Bang model (iii) V-model (iv) Waterfall model b) RAD Software process model stands for			(i)	Spiral mode	1	ı
(iii) V-model (iv) Waterfall model (iv) Waterfall model 1 kapid Application Development 1 c) Scrum event is divided into how many parts? Name them 1 Scrum event has four parts: 1 Sprint, Daily Scrum, Sprint Review, Sprint Retrospective 1 d) Write two advantages and disadvantages of waterfall model. 2 Advantages of waterfall model Easy to arrange task 2 Clearly defined stages Easy to manage 4 Well understood milestones Disadvantages of waterfall model 2 Poor model for long project Cannot fulfill changing requirement 4 No working software is developed till last phase 5 5 Dificult to measure the progress in phases 1 1 OR Drawbacks of Pair programming: 5 5 Different skill set may kill the project. 5 5 5 Disagreement may occur between programmers. Absence of partners 2 (1 + 1 for two valid advantages and disadvantages) 6 6 OR 0 7 1 5			(ii)	Big Bang m	odel	ı
(iv) Waterfall model 1 kapid Application Development 1 Rapid Application Development 1 c) Scrum event is divided into how many parts? Name them Scrum event has four parts: Sprint, Daily Scrum, Sprint Review, Sprint Retrospective 1 d) Write two advantages and disadvantages of waterfall model. 2 Advantages of waterfall model Easy to arrange task Clearly defined stages 2 Bisadvantages of waterfall model Easy to manage 2 Well understood milestones Disadvantages of waterfall model 2 Poor model for long project Cannot fulfill changing requirement 2 No working software is developed till last phase 2 3 Different skill set may kill the project. 2 3 If the may for valid answer) 2 3			(iii)	V-model		ı
b) RAD Software process model stands for			(iv)	Waterfall n	nodel	
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Easy to arrange task Clearly defined stages Easy to manage Well understood milestones 			Advantag	ges of waterfa	ill model	1
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e) What is Agile Manifesto? (i) INDIVIDUALS AND INTERACTIONS			Different skill	set may kill	the project	I
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(i) INDIVIDUALS AND INTERACTIONS		۹)	What is Aoile	Manifesto?		 ર
		~,	(i) INDIVIDU	UALS AND I	NTERACTIONS	5

		(ii) WORKING SOFTWARE	
		(iii) CUSTOMER COLLABORATION	
		(iv) RESPONDING TO CHANGE	
		OR	
		Write the advantages and disadvantages of Component Based Model	
		Advantages	
		Reduce the cost & risk of software development.	
		Reduce the amount of software to be developed	
		Faster delivery of software.	
		Disadvantages	
		Requirement changes effect the software development.	
		Control over the system evolution is lost	
	f)	Explain Git and its features	3
	′	Git is a Distributed Version Control tool that supports distributed non-linear workflows by	_
		providing data assurance for developing quality software.	
		Features of Git:	
		Free and open source: It is freely available to download and also you can modify the	
		source code of it.	
		Automatic Backup of the Whole Repository: In case of loss of repository, it can be	
		recovered from other workstations too.	
		Maintain full history of the changes: When pull operation is performed, developer gets all	
		the previous edit history.	
		Allow offline Repo access: Developer can work with its repository offline.	
		Efficient Algorithm: Git provides best algorithms for branching and merging and all the	
		operations to work smoothly.	
		(1 mark for explanation of git 2 marks for any two features)	
	<i>σ</i>)	Alarm Management System	4
	6/		
		Display time	
		Settime	
		\rightarrow	
		Set display-mode	
		User (include) Make sound	
		(include)	
		(include)	
		X Snooze	
1		OR	
		Actors: Cellular network and User	
1	1		1
		Use cases: Place phone call, receive phone call, use scheduler, place conference call and receive	
		Use cases: Place phone call, receive phone call, use scheduler, place conference call and receive additional call	
		Use cases: Place phone call, receive phone call, use scheduler, place conference call and receive additional call Relationship:	

		Place phone call < <extends>> Place conference call</extends>	
		Receive phone call < <extends>> Receive additional call</extends>	
		Details of Use-cases:	
		(i) Place Phone call-	
		Type- Standard use case	
		Linked use cases: Place conference call (extension use case)	
		Actors involved: Cellular network and user	
		Main flow:	
		(a) The use case is activated by user and cellular network.	
		(b) This use case can activate the place conference call use case.	
		(ii) Receive phone call-	
		Type- Standard use case	
		Linked use cases: receive additional call (extension use case)	
		Actors involved: Cellular network and user	
		Main flow:	
		(a) The use case is activated by user and cellular network.	
		(b) This use case can activate receive additional call use case.	
		(iii) Use scheduler-	
		Type- Standard use case	
		Linked use cases: None	
		Actors involved: user	
		Main flow: The use case is activated by user.	
		(iv) Place conference call-	
		Type- Extension use case	
		Actors involved: user, cellular network	
		Main flow: The use case is activated by Place phone call(not always).	
		Return to 'Place phone call' main flow.	
		(v) Receive additional call-	
		Type- Extension use case	
		Actors involved: user, cellular network	
		Main flow: The use case is activated by Receive Phone call(not always).	
		Return to 'Receive phone call' main flow.	
		SECTION- C	
Л	2)	Name any two files that are found in project's application folder	1
4	aj	¹ / ₂ mark for one valid file name	1
	b)	What is the difference between Undate and Alter Commands of SOL?	1
	5)	OR	1
		What is the difference between commit and rollback command of SOI ?	
		1/2 mark for each correct difference	
		Differentiate between GET and POST methods?	1
	C)	1/2 mark for each proper difference	1
	d)	Find the error in the following command:	1
	u)	Salact * from Employee where DOL is 2018 04 01:	1
		Select * from Employee where $DOJ = 2018 \cdot 04 \cdot 01$, Soloct * from Employee where $DOJ = 2018 \cdot 04 \cdot 01$?	
		What is the difference between Cher and Versher data type of $SOI(2)$	1
	e)	What is the difference between Char and Varchar data type of SQL?	T
	L)	72 Inark for each correct different leave evolution in COL 2Events in with events leave	
	(T)	what are the different keys available in SQL (Explain with example	3
	<u>,</u>	1 mark for each key with proper explanation and example	-
	g)	what do you understand by degree and cardinality of a relation? If table1 having 3 rows and 5	3
		columns and table2 having 2 rows and 4 columns then what will be the degree and cardinality	
	1	of the Cartesian product of table1 and table2	

		Table: TR	AVEL			
CNO	CNAME	TRAVELDATE	KM	VCODE	NOP	
101	K.Niwal	2015-12-13	200	V01	32	
103	Fredrick Sym	2016-03-21	120	V03	45	
105	Hitesh Jain	2016-04-23	450	V02	42	
102	Ravi Anish	2016-01-13	80	V02	40	
107	John Malina	2015-02-10	65	V04	2	
104	Sahanubhuti	2016-01-28	90	V05	4	
106	Ramesh Java	2016-04-06	100	V01	25	
To di AnsS DES	NOP is number of splay CNO, CNAME, ELECT CNO, CN C;	TRAVELDATE from AME, TRAVELI	n the table T	I FRAVEL in des I M TRAVEL	cending or ORDER	der of CNO. BY CNO
To di trave AnsS VCC OR SEL Todis betw AnsS '2015 AND ; OR SEL	splay the CNAME of ling by vehicle with ELECT CNAME DE='V02'; ECT CNAME FR splay the CNO and C een '2015 - 12 - ELECT CNO, CN 5/05/01' TRAVELDATE - ECT CNO, CNAM	Fall the customers code V01 or V02. FROM TRAVEL OM TRAVEL WI NAME of those cu 31' and '2015 AME from TRAV <= '2015/12/31'	from the ta WHERE VCC stomers fro - 05 - 01' VEL WHE	ble TRAVEL w VCODE='V0 DDE IN ('V0 m the table T RE TRAVEI	ho are 1' OR 1', 'V02'); RAVEL who LDATE >=	travelled
WH	ERE TRAVELDA) '20151231'	TE BETWEEN '2	2015/05/01'			
AND ; OR SEL WHI AND	ECT CNO, CNAM ERE TRAVELDA) TRAVELDATE \	IE from TRAVEI TE <= '2015/12/3' >= '2015/05/01'	_ l'			
AND ; OR SEL WHI AND ; OR SEL WHI AND	ECT CNO, CNAM ERE TRAVELDA TRAVELDATE : ECT CNO, CNAM ERE TRAVELDA) '2015/05/01'	IE from TRAVEI TE <= '2015/12/3 >= '2015/05/01' IE from TRAVEI TE BETWEEN '2	1' 2015/12/31'			

		2 V02							
		(½ Mark for correct output)							
		SELECT DISTINCT	VCODE FROM TRA	AVEL;					
		AnsDISTINCT V	CODE						
		V01							
		V02							
		V03							
		V04							
		V05OR							
		Consider the table	e Employee table	with the followi	ng structure:				
		Column name	Data Type	Size	Constraint				
		Empno	Char	4	Primary Key				
		Name	Varchar	25					
		Dateofjoin	Date						
		Gender	Char	1					
		Salary	Decimal	8,2		_			
		Deptcode	Char	4		_			
			·						
		Write a python pro	ogram to read all th	ne rows from Em	ployee table whose salary	is between 40000 and			
		60000. Display the	rows in a formatted	d manner. P-418	sahoo				
		1 mark for openin	ig database conne	ection					
		1/2 mark for creatin	ng cursor						
		1/2 mark for sql qu	ery						
		1/2 mark for fetcha	ll()						
		1/2 mark for correc	t for loop						
		1 mark for printing	in correct format						
				SECTION- D)				
5	a)	Expand the follow	ving i) GF	ր	ii)W3C		1		
	•	General Public Lic	cense ,		,				
		World wide web	Consortium						
	b)	What is a cyber a	ttack?				1		
	-	Cyber attack is a	n umbrella term	used to classify	different computer and	I network attacks or			
		activities like exte	ortion, identity th	neft, email hacl	king, hardware stealing a	and physical security			
		breaching.							
	c)	a)Copyright					1		
	d)	Amit used a pen o	drive to copy files	from his friend	's laptop to his office co	omputer. Soon his	2		
		office computer s	tarted abnormal	functioning. So	metimes it would restart	by itself and			
		sometimes it wou	uld stop functionin	ng totally. Whic	h of the following option	s out of (i) to (iv),			
		would have caused the malfunctioning of the computer							
		would have cause			puter.				
		Justify the reason	for your chosen	option:	puter.				
1		Justify the reason (i) Computer Wor	for your chosen	option:	puter.				
		Justify the reason (i) Computer Wor (ii) Computer Viru	i for your chosen m us	option:	puter.				
		(i) Computer Viru (ii) Computer Viru (ii) Computer Viru (iii) Computer Bac	i for your chosen m s cteria	option:	puter.				
		(i) Computer Wor (ii) Computer Wor (ii) Computer Viru (iii) Computer Bac (iv) Trojan Horse	i for your chosen m us cteria	option:	puter.				
		(i) Computer Wor (ii) Computer Wor (ii) Computer Viru (iii) Computer Bac (iv) Trojan Horse Ans:	i for your chosen m us cteria	option:	puter.				

	OR	
	(iv) Trojan Horse	
	Pen drive containing Computer Virus / Trojan Horse was used before the abnormal functioning	
	started, which might have corrupted the system files.	
	Computer Virus/ Trojan Horse affects the system files and start abnormal functioning in the	
	computer	
e)	1 mark for each correct advantage of Online Campaigning?	2
f)	What do understand by Internal Threats to the System? Give two examples	3
	Internal Threats: Data and programs within a computer system are vulnerable to deliberate and	
	accidental destruction both from within an organization and from outside it. When it is floppy	
	disk, Which after months of the project loading without complaint. comes up with a message,	
	disk unreliable, then it is termed as Internal Threat to the system.	
	Some Internal Threats to the System are as follows.	
	(i) Hardware Failure:- A disk head crash for example can make the contents of a hard disk	
	unreadable.	
	(ii) Faulty Procedures:- A careless employees who makes entries into an accounts system can	
	cause havoc.	
	(iii) Natural Disasters:- Fire flood hurricanes and earthquakes can destroy a building taking	
	every last customer record with it.	
	OR	
	What is Plagiarism? How to avoid plagiarism?	
	Plagiarism is usually defined as the "wrongful appropriation" of another's words, thoughts, ideas, or expressions and the misrepresentation that they are the representer's original work. Of course, with a definition that broad and vague, most any sort of researched work might be considered plagiarized. However, plagiarism is considered academic dishonesty, but is not a crime, per se.	
	Use quotation mark around someone else's phrase or words	
	Cite the material	
	Get involved in the work you are expected to do. This will reduce the chances of plagiarism.	
	Structure and plan your writing well in advance.	
	Use plagiarism checkers	
	Don't forget your online resources	