KENDRIYA VIDYALAYA SANGATHAN JAIPUR REGION
PRE BOARD EXAMINATION 2020-21

Class   **: XII**   **Time**   **: 3 Hrs**
Subject   **: (065) INFORMATICS PRAC.**   **Maximum Marks : 70**

MARKING SCHEME

Q1.		State whether True or False: (i) A worm is a self-replicating program. (ii) Firewall can be implemented in software as well as in hardware.	1
		(i) True (ii) True ½ M each	
Q2.		Fill in the blanks: Which command is used to show a chart: (i) chartshow() (ii) show() (iii) display() (iv) showchart()	1
		(iii) show()	
Q3.		Write the output of the following SQL command: select round(458.45, - 1) (i) 450 (ii) 400 (iii) 460 (iv) 500	1
		(iii) 460	
Q4.		Given a Pandas series called Sequences, the command which will display the last 7 rows is _____. (i) print(Sequences.tail(7)) (ii) print(Sequences.Tail(7)) (iii) print(Sequences.last(7)) (iv) print(Sequences.Last(7))	1
		(i) print(Sequences.tail(7))	
Q5.		Given the following series objects:	1

S1	
0	10
1	15
2	20
4	25
5	30

S2	
0	1
2	2
3	3
4	4
6	5

		What will be the result of S1 – S2?	
		0 9.0 1 NaN 2 18.0 3 NaN 4 21.0 5 NaN 6 NaN dtype: float64	
Q6.		Statement import pyplot.matplotlib is a valid statement for working on pyplot functions. (True / False)	1
		False	
Q7.		Full form of bcc in the context of email is _____.	1
		blind carbon copy	

Q8.		The axis 1 identifies a dataframe's _____
		  (i) rows
		  (ii) columns
		  (iii) values
		  (iv) datatype
			1

		(ii) column	
Q9.		Which of the following is not a network topology : Star, Mesh , Tree, Bug , Bus	1
		Bug	
Q10.		For web pages where the information is changed frequently, for example, stock prices, weather information which out of the following options would you advise? a) Static web page b) Dynamic web page Justify your answer.	1
		(b) Dynamic web page	

Q11.		The substr() function in MySql is an example of _____.
		  (i) Math function
		  (ii) Text function
		  (iii) Date Function
		  (iv) Aggregate Function
			1

		(ii) Text function	
Q12.		_____ refers to any information about you or created by you that exists in digital form, either online or on an electric storage device.	1
		Digital asset / Digital property	

Q13.		In Pandas, _____ function will return the number of rows in a dataframe.	1
		len()	
Q14.		I can keep you signed in. I can remember your site preferences. I can give you locally relevant content. Who am I ?	1
		Cookies	

Q15.		Which amongst the following is not an example of Antivirus ?
		   i) Avast
		   ii) Quick Heal
		   iii) Edge
		   iv) McAfee
			1

		(iii) Edge	
Q16.		A mail or message sent to a large number of people indiscriminately without their consent is called_____.	1
		Spam	
Q17.		According to a survey, one of the major asian country generates approximately about 2 million tonnes of electronic waste per year. Only 1.5 % of the total e-waste gets recycled. Suggest a method to manage e-waste.	1
		Buy environmentally friendly electronics Donate used electronics to social programs Reuse , refurbish electronics Recycling e-waste Any other correct answer to be considered 1 mark for the correct answer	
Q18.		The _____ command is used to sort a column's data in SQL in ascending order.	1
		Order by	
Q19.		Write the SQL command that removes leading and trailing spaces from a given string.	1
		Select Trim()	
Q20.		The _____ topology has a central controller.	1
		STAR	

Q21.		What is the name of the IT law that India is having in the Indian legislature?
		   i) India's Technology (IT) Act, 2000
		   ii) India's Digital Information Technology (DIT) Act, 2000
		   iii) India's Information Technology (IT) Act, 2000
		   iv) The Technology Act, 2008
			1

		(iii) India's Information Technology (IT) Act, 2000	
Q22.		Consider the following dataframe df as shown below:	

```
        name       eng   ip   geo    total
T1   kushagra   52    98   85     235
T2   naresh     48    85   88     221
T3   prakhar    69    94   78     241
T4   trapti     70    81   91     242
```

	(i)	Write the code to create above dataframe in Python (Pandas code).	1

import pandas as pd
ind=['T1','T2','T3','T4']
d={'name':['kushagra', 'naresh', 'prakhar','trapti'],
   'eng':[52,48,69,70],
   'ip':[98,85,94,81],
   'geo':[85,88,78,91],
   'total':[235,221,241,242]
   }
df=pd.DataFrame(d, index=ind)
print(df)

	(ii)	What will be the output produced by following statements?	1

>>> print(df.at['T3','total'], df.at['T1','ip'])
  (i)   235   94
  (ii)   241   98
  (iii) 241   94
  (iv)   235   98

(ii) 241   98

	(iii)	What will be the output produced by following statements?	1

>>> print(df.loc['T2' : 'T3' , 'ip':'geo'])

(i)		ip	geo	(ii)		ip
	T2	85	88		T2	85
	T3	94	78			
(iii)		ip	geo	(iv)		ip
	T2	85	88		T2	85
					T3	94

(i)   ip   geo
T2   85   88
T3   94   78

	(iv)	What will be the output produced by following statements?	1

>>> print(df.iat[2,1], df.iat[1,2])
  (i)   prakhar   69
  (ii)   T2   naresh
  (iii) kushagra   52
  (iv)   69   85

(iv) 69   85
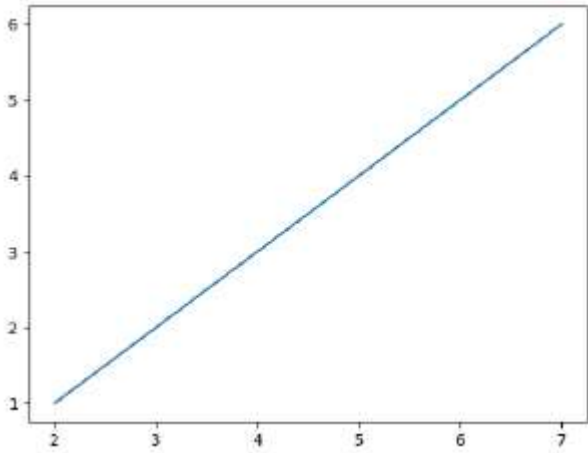
	(v)	What will be the output produced by following statements? >>> print(df.iloc[: : 2, 0 : : 4])	1

(i)	name	total		(ii)	name	total
T1	kushagra	235		T2	naresh	221
T2	naresh	221		T4	trapti	242
(iii)	name	total		(iii)	name	total
T1	kushagra	235		T3	prakhar	241
T3	prakhar	241		T4	trapti	242

(iii)   name   total
T1   kushagra   235
T3   prakhar   241

Q23. Consider the table "ITEM" created in MySQL and given below:

ino	Name	Rate	Qty	Model
9	EARPHONE	750	5	JBL
10	EARPHONE	399	4	Mi
11	HEADPHONE	700	5	JBL
12	EARPHONE	1499	7	samsung
13	COLLER MIC	288	5	Mi
14	MOBILE STAND	499	5	lenovo
15	earphone	399	5	BoAT
16	earphone	699	50	samsung
17	headphone	1099	8	BoAt

(i) State the command that will give the output as :   1

Name	Model
EARPHONE	Mi
COLLER MIC	Mi

    a)   select name, model from item where model='Mi';
    b)   select name, model from item where model like 'Mi';
    c)   select name, model from item where ino in (10, 13);
    d)   select name, model from item where Qty=4 or Qty=5

Choose the correct option:
    (i)   Both (a) and (c)
    (ii)   Any of the option (a), (b), and (c)
    (iii)   Both (c) and (d)
    (iv)   Both (a) and (b)

(ii)   Any of the option (a), (b), and (c)

(ii)	What will be the output of the following command: select * from item where qty=5 order by model desc;	1
	(i)	
	12 EARPHONE 1499 7 samsung	
	16 earphone 699 50 samsung	
	10 EARPHONE 399 4 Mi	
	13 COLLER MIC 288 5 Mi	
	14 MOBILE STAND 499 5 lenovo	
	9 EARPHONE 750 5 JBL	
	11 HEADPHONE 700 5 JBL	
	15 earphone 399 5 BoAT	
	17 headphone 1099 8 BoAt	
	(ii)	
	15 earphone 399 5 BoAT	
	9 EARPHONE 750 5 JBL	
	11 HEADPHONE 700 5 JBL	
	14 MOBILE STAND 499 5 lenovo	
	13 COLLER MIC 288 5 Mi	
	(iii)	
	17 headphone 1099 8 BoAt	
	10 EARPHONE 399 4 Mi	
	12 EARPHONE 1499 7 Samsung	
	16 earphone 699 50 Samsung	
	(iv)	
	13 COLLER MIC 288 5 Mi	
	14 MOBILE STAND 499 5 lenovo	
	9 EARPHONE 750 5 JBL	
	11 HEADPHONE 700 5 JBL	
	15 earphone 399 5 BoAT	
	(ii) 15 earphone 399 5 BoAT 9 EARPHONE 750 5 JBL 11 HEADPHONE 700 5 JBL 14 MOBILE STAND 499 5 Lenovo 13 COLLER MIC 288 5 Mi	

	(iii)	Nishu has given the following command to obtain the highest rate of every item. Select max(rate) from item where group by name; but she is not getting the desired result. Help her by writing the correct command. (i) select name, max(rate) from item where group by name; (ii) select name, max(rate) from item group by name; (iii) select max(rate) from item group by model; (iv) select name, max(rate) from item order by name;	1
		(ii) select name, max(rate) from item group by name;	
	(iv)	State the command to display the model and the total quantity of every model whose total quantity is greater than 10 is : a) select name, sum(qty) from item group by model having sum(qty)>10 b) select model, sum(qty) from item group by name having sum(qty)>10 c) select model, sum(qty) from item group by model having sum(qty)>10 d) select model, sum(qty) from item where qty>10 group by model Choose the correct option: (i) Both (b) and (c) (ii) Any of the option (a), (b), and (d) (iii) Only (c) (iv) Both (a) and (d)	1
		(iii)	
	(v)	Help Alankar to write the command to display the name of the headphone of JBL company: (i) select * from item where name = '%phone' and model='JBL'; (ii) select * from item where name = 'headphone' and model='JBL'; (iii) select * from item where name like 'headphone'; (iv) select * from item where name like '%phone' and model='JBL';	1
		(ii) select * from item where name = 'headphone' and model='JBL';	
PART – B : Section I			
Q24.		Consider a given Series , S1:	2

	Avg_Salary
UP	5000
MP	6000
Gujarat	8000
Delhi	5500

Index

Write a program in Python Pandas to create the series.

import pandas as pd
S1=pd.Series([5000,6000,8000,5500],index=['UP','MP','Gujarat','Delhi'])
½ mark for import statement
½ mark for usage of Series ()

		½ mark for stating index as a list ½ mark for creating object m1	
Q25.		State any two differences between single row functions and multiple row functions. **OR** What is the difference between the order by and group by clause? Explain with an example.	2
		Differences between single row functions and multiple row functions. (i) Single row functions work on one row only whereas multiple row functions group rows (ii) Single row functions return one output per row whereas multiple row functions return only one output for a specified group of rows. OR The order by clause is used to show the contents of a table/relation in a sorted manner with respect to the column mentioned after the order by clause. The contents of the column can be arranged in ascending or descending order. The group by clause is used to group rows in a given column and then apply an aggregate function eg max(), min() etc on the entire group. (any other relevant answer) Single row v/s Multiple row functions 1 mark for each valid point Group by v/s Order by 1 mark for correct explanation 1 mark for appropriate example	

Q26.		Consider the decimal number x with value 7459.3654. Write commands in SQL to:
		   i) round it off to a whole number
		   ii) round it to 2 places before the decimal.
			2

		(i) select round(7459.3654, 0) (ii) select round(7459.3654, -2)	
Q27.		Consider the following Series object, S | CPU	5000
---	---
Monitor	4000
Speaker	800
UPS	2000	 i) Write the command which will display the name of the items having rate >1000. ii) Write the command to name the series as Item.	2
		i. print(S [S >250]) ii. S.name= 'Item' 1 mark each for correct answer of part (i) , (ii)	

Q28.		Shailly writes the following commands with respect to a table **Employee** having fields, empno, name, department, commission. Command1 : **SELECT COUNT(*) FROM EMPLOYEE**; Command2 : **SELECT COUNT(COMMISSION) FROM EMPLOYEE**; She gets the output as 7 for the first command but gets an output 5 for the second command. Explain the output with justification.	2
		This is because the column commission contains a NULL value and the aggregate functions do not take into account NULL values. Thus Command1 returns the total number of records in the table whereas Command2 returns the total number of non NULL values in the column commission.	
Q29.		Consider the following SQL string: "SELFMOTIVATION". Write commands to display: a. "MOTIVATION" b. "MOT" **OR** Considering the same string "SELFMOTIVATION". Write SQL commands to display: a. the position of the substring 'MOTIV' in the string "SELFMOTIVATION" b. the last 6 letters of the string	2
		a. select substr("SELFMOTIVATION", 5) b. select substr("SELFMOTIVATION", 5, 3) OR a. select instr("SELFMOTIVATION", "MOTIV") b. select right("SELFMOTIVATION", 6) (student may use other functions like – substring/ mid/ right .. etc	
Q30.		Consider the following DataFrame, classframe	2

	Rollno	Name	Class	Section	CGPA	Stream
St1	1	Naresh	IX	A	8.7	Science
St2	2	Lakshay	XII	B	8.9	Arts
St3	3	Trapti	X	C	9.2	Science
St4	4	Prakhar	XI	B	9.4	Commerce

Write commands to :
i. Add a new column 'Activity' to the Dataframe
ii. Add a new row with values (5 , Shailly, XII, D , 9.8, Arts)

i. classframe['Activity']=['Swimming', 'Dancing', 'Cricket', 'Singing']
ii. classframe.loc['St5']=[5,'Shailly', 'XI', 'B', 9.4, 'Commerce']
1 M for correct answer

Q31.		Expand the following terms related to Computer Networks: a. SMTP b. POP c. FTP d. VoIP	2
		a. SMTP: Simple Mail Transfer Protocol b. POP: Point to Point Protocol c. FTP: File Transfer Protocol d. VoIP: Voice over Internet Protocol ½ marks for each correct full form	
Q32.		List any two health hazards related to excessive use of Technology.	2
		The continuous use of devices like smartphones, computer desktop, laptops, head phones etc cause a lot of health hazards if not addressed. These are: i. Impact on bones and joints: wrong posture or long hours of sitting in an uncomfortable position can cause muscle or bone injury. ii. Impact on hearing: using headphones or earphones for a prolonged time and on high volume can cause hearing problems and in severe cases hearing impairments. iii. Impact on eyes: This is the most common form of health hazard as prolonged hours of screen time can lead to extreme strain in the eyes. iv. Sleep problem: Bright light from computer devices block a hormone called melatonin which helps us sleep. Thus we can experience sleep disorders leading to short sleep cycles. 2 marks for any two correct points	
Q33.		Layna is using her internet connection to book a flight ticket. This is a classic example of leaving a trail of web activities carried by her. What do we call this type of activity? What is the risk involved by such kind of activity?	2
		We call this type of activity as Digital Footprints Risk involved : It includes websites we visit emails we send, and any information we submit online, etc., along with the computer's IP address, location, and other device specific details. Such data could be used for targeted advertisement or could also be misused or exploited. 1 mark for naming the activity 1 mark for mentioning any one risk .	
		PART – B : Section II	
Q34.		Consider two objects x and y. x is a list whereas y is a Series. Both have values 2, 4, 9, 10. What will be the output of the following two statements considering that the above objects have been created already a. print (x*2) b. print(y*2) Justify your answer.	3
		a. will give the output as: [2,4,9,10, 2,4,9,10,] b. will give the output as 0 4 1 8	

		2 18 3 20 Justification: In the first statement x represents a list so when a list is multiplied by a number, it is replicated that many number of times. The second y represents a series. When a series is multiplied by a value, then each element of the series is multiplied by that number. 1 mark for output of list multiplication 1 mark for output of Series multiplication 1 mark for the justification	
Q35.		What do you mean by Plagiarism? Explain with the help of an example. **OR** What do you understand by Net Ettiquetes? Explain any two such ettiquetes.	3
		Definition of Plagirism – 2M Proper example – 1M OR Net Ettiquets refers to the proper manners and behaviour we need to exhibit while being online. These include: No copyright violation: we should not use copyrighted materials without the permission of the creator or owner. We should give proper credit to owners/creators of open source content when using them.	
Q36.		Consider the following graph. Write the code to plot it. **OR**	3

Draw the following bar graph representing the number of students in each class.
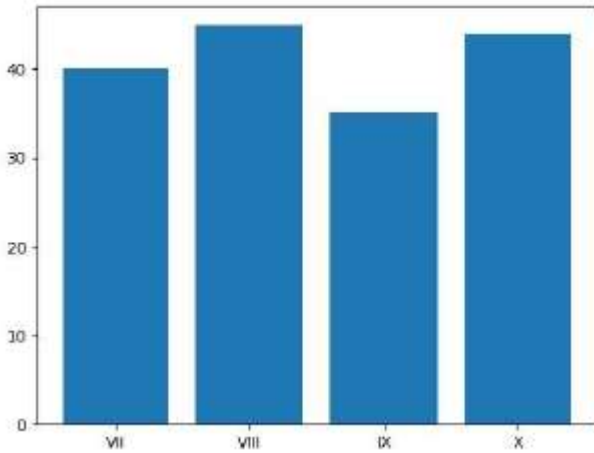

```
import matplotlib.pyplot as plt
plt.plot([2,7],[1,6])
plt.show()
```

alternative answer
```
import matplotlib.pyplot as plt
a = [1,2,3,4,5,6]
b = [2,3,4,5,6,7]
plt.plot (a,b)
```

1 mark for the import statement
1 mark for appropriate usage of plot()
1 mark for show()

OR

```
import matplotlib.pyplot as plt
Classes = ['VII','VIII','IX','X']
Students = [40,45,35,44]
plt.bar(classes, students)
plt.show()
```

1 mark for the import statement
1 mark for appropriate usage of pie()
1 mark for show()

Q37.		A relation SALESMAN is given below:	3

SNO	SNAME	SALARY	BONUS	DATEOFJOIN	AREA
A01	Kushagra Jain	30000	45.25	29-10-2019	Delhi
A02	Prakhar Sharma	50000	25.50	13-03-2018	Ajmer
B03	Trapti Singh	30000	35.00	18-03-2017	Jhansi
B04	Shailly	80000	45.00	31-12-2018	Delhi
C05	Lakshay Lawania	20000	10.25	23-01-1989	Jaipur
C06	Naresh	70000	12.75	15-06-1987	Ajmer
D07	Krishna Singh	50000	27.50	18-03-1999	Jhansi

		Write SQL commands to perform the following operations: i) Count the number of salesman area-wise. ii) Display the month name for the date of join of salesman of area 'Ajmer' iii) Display the total salary paid to all salesman.	
		(i) select area, count(sname) as "Number of salesman" from Salesman group by area; (ii) select monthname(dateofjoin) from Salesman where area='Ajmer'; (iii) select sum(salary) from Salesman;	

PART – B : Section III

Q38.		Write a program in Python Pandas to create the following DataFrame batsman from a Dictionary: | B_no	Name	Score1	Score2
1	Sachin	90	80
2	Dhoni	65	45
3	Kapil	70	90

4	Rahul	80	76	
				
				Perform the following operations on the DataFrame :
				  1) Add both the scores of a batsman and assign to column "Total"
				  2) Display the highest score in both Score1 and Score2 of the DataFrame.
				  3) Display the DataFrame
					5

		``` import pandas as pd d1={'B_NO':[1,2,3,4], 'Name':["Sachin","Dhoni","Kapil","Rahul"], 'Score1':[90,65,70,80], 'Score2':[80,45,90,76] } df=pd.DataFrame(d1) print(df) 1) df['Total'] = df['Score1']+ df['Score2'] Alternative Answer Scheme df['Total'] = sum(df['Score1'], df['Score2']) print(df) 2) print("Maximum scores are : " , max(df['Score1']), max(df['Score2'])) ``` 1 mark for import statement 2 marks for creating the dataframe 1 mark for creating column Total to hold the sum of scores 1 mark for displaying highest scores in Score1 & Score2	
Q39.		Write the SQL functions which will perform the following operations: i) To display the name of the month of the current date. ii) To remove spaces from the beginning and end of a string, " KV Sangathan ". iii) To display the name of the day eg, Friday or Sunday from your date of birth, dob.	5

		iv) To print the value of square root of 2 upto 2 decimal points. v) To compute the remainder of division between two numbers, n1 and n2 **OR** Write SQL for question from (i) to (iv) and output for SQL queries (v) and (vi), which are based on the table: KV given below: | KVCode	KVName	StationCode	Region	Zone
1603	Bharatpur	331	Jaipur	West
1595	Alwar	324	Jaipur	West
1596	Alwar Itarana	324	Jaipur	West
1019	Gandhidham IFFCO	11	Ahmedabad	West
1020	Gandhidham Railway	11	Ahmedabad	West
1769	Avadi AFS	584	Chennai	South
1702	Uri	390	Jammu	North
1296	Barnala AFS	172	Chandigarh	North	 (i) Print the details of KVs whose StationCode between 300 and 500 (ii) Print the details of KVs whose name ends with AFS (iii) Print the details of KVs of Jaipur region (iv) Print the number of KVs Zone-wise (v) Select Region, count(KVName) from KV where Zone='West' group by Region (vi) Select * from KV where substr(KVName, 2, 3)='and' or StationCode=390;	

		(i) select month(current_date());
		(ii) select trim(" KV Sangathan ");
		(iii) select dayname(dob) from student;
		(iv) select round(sqrt(2) , 2);
		(v) select n1 % n2;
		
		OR
		
		   (i) select * from KV where StationCode between 300 and 500;
		   (ii) select * from KV where KVName like '%AFS';
		   (iii) select * from KV where Region='Jaipur';
		   (iv) select Zone, count(KVName) from KV group by Zone;
		   (v) Region count(KVName)
		       Ahmedabad 2
		       Jaipur 3
		   (vi)
		
		| KVCode
			KVName	StationCode	Region	Zone

1019	Gandhidham IFFCO	11	Ahmedabad	West
1020	Gandhidham Railway	11	Ahmedabad	West
1702	Uri	390	Jammu	North		
Q40.		Global Infocom Ltd. is setting up the network in Jaipur. There are four departments	5

Market, Fun, Legal, Sales.

Distance between the departments is as under:

Market Dept to Fun Dept	80 m
Market Dept to legal Dept	180 m
Market Dept to Sales Dept	100 m
Legal Dept to Sales Dept	150 m
Legal Dept to Fun Dept.	100 m
Fun dept to Sales dept.	50 m

Number of computers :
        Market Dept : 20
        Legal Dept   : 10
        Fun Dept   : 50
        Sales Dept   : 100

i) Suggest a most suitable cable layout for the above connections.

ii) Suggest the network type between the departments.

ii) Suggest the most suitable building to place the server with suitable reason.

iii)Suggest the placement of the following devices :

   a) Repeater

   b) Hub/Switch

iv) The organization is planning to link its Head Office situated in 'New Delhi'. Which type of network out of LAN, MAN, WAN will be formed? Justify your answer.

(i)   Correct answer – 1 M
(ii)   LAN
(iii)   Sales Dept, because it is having maximum number of computers
(iv)   Correct answer – 1 M
(v)   WAN

- - - End of Marking Scheme - - -