

CENTRAL KERALA SAHODAYA
 MODEL EXAMINATION 2022-2023
 Class: XII
 INFORMATICS PRACTICES (065)

Maximum Marks: 70

Time Allowed: 3 hours

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A has 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each.
8. All programming questions are to be answered using Python Language only.

SECTION A

1.	Select the device that helps to transfer the digital signals to be transferred over telephone lines: a. Switch b. Modem c. Gateway d. Hub	1
2.	Help Ritesh to write the command to display the name of the youngest student? a. SELECT NAME,MIN(DOB) FROM STUDENT; b. SELECT NAME,MAX(DOB) FROM STUDENT; c. SELECT NAME,MIN(DOB) FROM STUDENT GROUP BY NAME; d. SELECT NAME,MAXIMUM(DOB) FROM STUDENT;	1
3.	A..... some lines of malicious code that can copy itself and can have detrimental effect on the computers, by destroying data or corrupting the system. a. Cyber crime b. Computer virus c. Program d. Software	1

4.	Which network topology requires a central controller or hub? a. Star b. Bus c. Mesh d. Tree	1
5.	What will be the result of the following query? SELECT SUBSTR('ABCDEFGH',3,4); a. ABCD b. BCDE c. DEFG d. EFGH	1
6.	Which of the following activity is an example of leaving active digital footprints? a. Surfing internet b. Visiting a website c. Sending an email to a friend d. None of the above	1
7.	Intellectual property is legally protected through a. Copyright b. Patent c. Registered trademark d. All of the above	1
8.	What will be returned by the given query? SELECT ROUND(153.669,2); a. 153.6 b. 153.66 c. 153.67 d. 153.7	1
9.	What will be return by the given query? SELECT MONTH('2020-05-11'); a. 5 b. 11 c. May d. November	1
10.	Software that can be freely accessed and modified is called..... a. Synchronous software b. Package software c. Open source software d. Middleware	1

11.	Which is the correct answer for the given query? SELECT POW(3,4); a. 12 b. 81 c. 7 d. 1	1
12.	Gaining unauthorized access to a network or computer for digital files with malicious intention is called a. Cracking b. Hacking c. Banging d. Phishing	1
13.	Which is the correct query for extracting a specified number of characters from the right of the text? a. SELECT RIGHT('ARUNIMA',1); b. SELECT RIGHT('ARUNIMA',2,3); c. Both A and B is True d. None of the above	1
14.	In a DataFrame, Axis =0 represents the elements. a. Row b. Columns c. Both row and column d. None of the above	1
15.	To specify datatype int16 for a series object, you can write: a. Pd.Series(data=array,dtype=int16) b. Pd.Series(data=array,dtype=mumpy.int16) c. Pd.Series(data=array,dtype=pandas.int16) d. All of the above	1
16.	To change the 5 th columns value at 3 rd row as 35 in DataFrame DF, you can write. a. DF[4,6]=35 b. DF[3,5]=35 c. DF.iat[4,6]=35 d. DF.iloc[6:9,3:5]=35	1
Q17 and Q18 are ASSERTION and REASONING based questions. Mark the correct choice as		
a. A is True but R is False b. A is False but R is True c. Both A and R are True and R is the correct explanation of A d. Both A and R are True but R is not the correct reason of A		

17.	Assertion (A): Digital footprint is the trail of data we leave behind when we visit any website (or use any online application portal) to fill-in data or perform any transaction. Reason(R): While online, all of us need to be aware of how to conduct ourselves.	1
18.	Assertion (A): Pandas is an open source Python library which offers high performance, easy-to-use data structures and data analysis tools. Reason(R): Professionals and developers are using the pandas library in data science and machine learning.	1
SECTION B		
19.	What is the importance of a router? OR Explain LAN and MAN.	2
20.	What is digital property? Give some examples of digital properties.	2
21.	Rashidha, is a librarian she wants to display dates on which number of issued books is greater than 5. She found an error while executing the following query. SELECT ISSUED_DATE FROM STUDLIB HAVING ISSUED_DATE GROUP BY COUNT(*)>5; Help her to identifying error and write the correct query.	2
22.	Write any four aggregate functions with example.	2
23.	Write a python code to create the following DataFrame using Dictionary, and pandas library has been imported as pd. <pre> 101 Harash M 102 Arun M 103 Ankur M 104 Harpahul M 105 Divya F 106 Jeet F </pre>	2
24.	What will be the output of the following code. <pre> import pandas as pd S=pd.Series([10,20,30,40,50],index=['a','b','c',0,1]) print(S.loc['a']) print(S.loc[0]) </pre>	2
25.	Carefully observe the following code and find out the errors , rewrite the code and under line each corrections. <pre> import pandas as pd import numpy as np arr2=pd.array([101,113,124],[130,140,200],[115,216,217]) df3=np.DataFrame(arr2) print(dtf3) </pre>	2

SECTION C

<p>26.</p>	<p>Write the outputs for SQL queries(i) to (iii) which are based on the given table “STOCK”.</p> <p align="center">STOCK</p> <table border="1"> <thead> <tr> <th>PID</th> <th>PNAME</th> <th>CATEGORY</th> <th>QTY</th> <th>PRICE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Keyboard</td> <td>IO</td> <td>15</td> <td>450</td> </tr> <tr> <td>2</td> <td>Mouse</td> <td>IO</td> <td>10</td> <td>350</td> </tr> <tr> <td>3</td> <td>Wi-Fi Router</td> <td>NW</td> <td>5</td> <td>2600</td> </tr> <tr> <td>4</td> <td>Switch</td> <td>NW</td> <td>3</td> <td>3000</td> </tr> <tr> <td>5</td> <td>Monitor</td> <td>O</td> <td>10</td> <td>4500</td> </tr> <tr> <td>6</td> <td>Printer</td> <td>O</td> <td>4</td> <td>177000</td> </tr> </tbody> </table> <p>i. To display the records in decreasing order of price. ii. To display the category and its average price. iii. To display category and category wise highest price of the product.</p> <p align="center">OR</p> <p>i. Display the unique categories of items. ii. Display the product name starts with M along with their price. iii. To calculate the total quantity of product which belongs from category ‘IO’?</p>	PID	PNAME	CATEGORY	QTY	PRICE	1	Keyboard	IO	15	450	2	Mouse	IO	10	350	3	Wi-Fi Router	NW	5	2600	4	Switch	NW	3	3000	5	Monitor	O	10	4500	6	Printer	O	4	177000	<p>3</p>										
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<p>27.</p>	<p>Satyam, a database analyst has created the following table: He has written the following queries: Help him in predicting the output of the below queries.</p> <p align="center">STUDENT</p> <table border="1"> <thead> <tr> <th>RegNO</th> <th>SNAME</th> <th>STREAM</th> <th>OPTIONAL</th> <th>MARKS</th> </tr> </thead> <tbody> <tr> <td>S1001</td> <td>Akshat</td> <td>Science</td> <td>CS</td> <td>99</td> </tr> <tr> <td>S1002</td> <td>Harshit</td> <td>Commerce</td> <td>IP</td> <td>95</td> </tr> <tr> <td>S1003</td> <td>Devika</td> <td>Humanities</td> <td>IP</td> <td>100</td> </tr> <tr> <td>S1004</td> <td>Manreen</td> <td>Commerce</td> <td>IP</td> <td>98</td> </tr> <tr> <td>S1005</td> <td>Gaurav</td> <td>Humanities</td> <td>IP</td> <td>82</td> </tr> <tr> <td>S1006</td> <td>Saurav</td> <td>Science</td> <td>CS</td> <td>NULL</td> </tr> <tr> <td>S1007</td> <td>Bhaskar</td> <td>Science</td> <td>CS</td> <td>95</td> </tr> <tr> <td>S1008</td> <td>Bhaskar</td> <td>Science</td> <td>CS</td> <td>96</td> </tr> </tbody> </table> <p>i. Select max(MARKS) from student +min(MARKS) from student where OPTIONAL=’CS’; ii. Select avg(MARKS) from student where OPTIONAL=’IP’; iii. Select length(SNAME) from student where MARKs is NULL;</p>	RegNO	SNAME	STREAM	OPTIONAL	MARKS	S1001	Akshat	Science	CS	99	S1002	Harshit	Commerce	IP	95	S1003	Devika	Humanities	IP	100	S1004	Manreen	Commerce	IP	98	S1005	Gaurav	Humanities	IP	82	S1006	Saurav	Science	CS	NULL	S1007	Bhaskar	Science	CS	95	S1008	Bhaskar	Science	CS	96	<p>3</p>
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<p>28.</p>	<p>Write python code to create the following series.</p> <p>i. Show details of 1st 3 employees using head function. ii. Show value of index no.102 iii. Show details of “Arun”.</p>	<p>3</p>																																													

	<p>The Series will be like this.</p> <p>101 Harash 102 Arun 103 Ankur 104 Harpahul 105 Divya 106 Jeet</p>	
29.	<p>Write a program to create the series using list and display only those values greater than 200 in the given Series "S1".</p> <p>A 300 B 100 C 1200 D 1700</p>	3
30.	<p>What do you mean by cybercrime? Explain its type and write the measures to avoid it?</p> <p style="text-align: center;">OR</p> <p>Mr. Ankit, who is a business man by profession faced some situations unfair recently. Whenever he opens his laptop he finds that someone who controlled his device in an unauthorized way.</p> <p>i. What is this happening to Ankit? ii. What is the immediate action should he wants to handle this unfair situation?</p> <p>After solving this issue he faced an online harassment from his Facebook account.</p> <p>iii. What type of cyber-attack is this?</p>	3
SECTION D		
31.	<p>Write suitable SQL query for the following:</p> <p>a) Select concat("information", "technology") b) Select instr("computer", "er") c) Select truncate(465.4993, 2) d) Select mod(5,2) e) Select substr("information technology",-5)</p> <p style="text-align: center;">OR(only for c,d,e)</p> <p>c) select month('2010-02-07'); d) Convert and display string 'large' into uppercase. e) Write a query to remove trailing spaces of string ' RDBMSMySQL '.</p>	5

<p>32.</p>	<p>Preetha is doing a research in the field of agriculture. For her plotting purposes, she has to generate some data as.</p> <p>Salt=800 Magnesium=17 Qty=(Salt*3)+ (Magnesium*numpy.random.randn(200))</p> <p>Write a program to plot histogram with this data and the orientation must be horizontal with the bins 30.</p> <p style="text-align: center;">OR</p> <p>Write a python code to plot a bar chart for India’s medal tally as per the following data: Also give suitable labels and title.</p> <p>Medals=[‘GOLD’,’SILVER’,’BRONZE’,’TOTAL’] NOs=[26,20,20,66]</p>	<p>5</p>												
<p>33.</p>	<p>Intelligent Hub India is a knowledge community aimed to uplift the standard of skills and knowledge in the society. It is planning to setup its training centers in multiple towns and villages India with its head offices in the nearest cities. They have created a model of their network with a city, a town and 3 villages as given.</p> <p>As a network consultant, you have to suggest the best network related solution for their issues/problems raised in (i) to (v) keeping in mind the distance between various locations and given parameters.</p> <table border="1" data-bbox="315 1077 771 1341"> <tr> <td colspan="2">No of computers installed at various locations are as follows:</td> </tr> <tr> <td>YTOWN</td> <td>100</td> </tr> <tr> <td>VILLAGE 1</td> <td>10</td> </tr> <tr> <td>VILLAGE 2</td> <td>15</td> </tr> <tr> <td>VILLAGE 3</td> <td>15</td> </tr> <tr> <td>CITY OFFICE</td> <td>5</td> </tr> </table> <div data-bbox="315 1377 1265 1829" style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p style="text-align: center;">YHUB</p> <p>The diagram shows a network structure. On the left, a box labeled 'XCITY' contains a 'Head Office'. To the right, a larger box labeled 'YHUB' contains three ovals representing 'Village 1', 'Village 2', and 'Village 3', and a box representing 'YTOWN'.</p> </div>	No of computers installed at various locations are as follows:		YTOWN	100	VILLAGE 1	10	VILLAGE 2	15	VILLAGE 3	15	CITY OFFICE	5	<p>5</p>
No of computers installed at various locations are as follows:														
YTOWN	100													
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Shortest distance between various locations:	
VILLAGE 1 TO YTOWN	2 km
VILLAGE 2 TO YTOWN	1.2 km
VILLAGE 3 TO YTOWN	3 km
VILLAGE 1 TO VILLAGE 2	3.5 km
VILLAGE 1 TO VILLAGE 3	4.5 km
VILLAGE 2 TO VILLAGE 3	3.5 km
CITY HEAD OFFICE TO YHUB	30 km

Note:

In villages, there are community centers, in which one room has been given as training center to this organization to install computers.

The organization has got financial support from the government and top IT companies.

- i. Suggest the most appropriate location of the SERVER in the YHUB (out of the 4 locations), to get the best and effective connectivity. Justify your answer.
- ii. Suggest the best wired medium and draw the cable layout (location to location) to efficiently connect various locations within the YHUB.
- iii. Which hardware device will you suggest to connect all the computers within each location of YHUB?
- iv. Which server/protocol will be most helpful to conduct live interaction of Experts from Head office and people at YHUB locations?
- v. The organization also has inquiry office in another city about 50-60 km away in hilly region. Suggest the suitable transmission media to interconnect to school and inquiry office out of the following:
 - Fiber optic cable
 - Microwave
 - Radio wave

SECTION E

34.

Consider the following table STOCK:

4

STOCK				
Sl.No	Item	Type	Price	Stockdate
1	Hammock	Bedroom	35500.57	2020-04-21
2	Divan	Living	31000	2020-05-21
3	Corner set	Living	12000	2020-05-24
4	Bookshelf	Study	38000	2020-04-23
5	TV	Living	18000.78	2020-05-21
6	Writing Desk	Study	8000	2020-05-21
7	Bed Lamp	Bedroom	5000	2020-04-22
8	Table fan	Living	3500	2020-05-23
9	ceiling fan	Bedroom	6138	2020-04-24

	<p>i. Write a query display all records in alphabetical order. ii. Write a query display item name and stock date that are used in living area or study room. iii. Write a query display the average price for the bedroom items having the price is greater than 10000. iv. Write a query display the item with their price round to 1 decimal position.</p> <p style="text-align: center;">OR (Only for iv)</p> <p>Write a query to count the total no of Items purchased for Study room.</p>																					
35.	<p>Consider the following DataFrame df and answer questions.</p> <table border="1" data-bbox="315 705 1058 898"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>DEPT</td> <td>CS</td> <td>PROD</td> <td>MEDICAL</td> </tr> <tr> <td>EMPNO</td> <td>101</td> <td>102</td> <td>103</td> </tr> <tr> <td>ENAME</td> <td>SMITHA</td> <td>JEFFIN</td> <td>RAHUL</td> </tr> <tr> <td>SALARY</td> <td>20000</td> <td>18000</td> <td>20000</td> </tr> </tbody> </table> <p>i. Write code to delete column B. ii. Change the value of column A to 100. iii. Display DEPT and SALARY of column A and B. iv. Write code to rename column 'A' to 'D' which will not affect original DataFrame.</p> <p style="text-align: center;">OR(Only for iv)</p> <p>Write code to add a row COMM with values [3000,4000,5000]</p>		A	B	C	DEPT	CS	PROD	MEDICAL	EMPNO	101	102	103	ENAME	SMITHA	JEFFIN	RAHUL	SALARY	20000	18000	20000	4
	A	B	C																			
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