 **Indian School Al Wadi Al Kabir**

 **PRELIMINARY EXAMINATION – 1**

**INFORMATICS PRACTICES (Code: 065)**

CLASS : XII Max. Marks:70

Date: 05/12/2023 Time: 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 02 questions carrying 04 marks each.
7. Section E has 03 questions carrying 05 marks each.
8. All programming questions are to be answered using Python Language only.

|  |  |  |
| --- | --- | --- |
|  | **SECTION A** |  |
| 1. | Which networking device is used to amplify a network signal when it travels a long distance in transmission media and due to resistance of media signal becomes weak. a. Router b. Switch c. Repeater d. Gateway  | 1 |
| 2. | The one who tries to gain unauthorized access to computers or networks in order to steal sensitive data with the intent to damage or bring down systems is called ------------------- 1. a) Cracker
2. b) Plagiarism
3. c) Ethical Hacker
4. d) Phishing
 | 1 |
| 3. | Which of the following measures should not be adopted to recycle e-waste safely?1. Donate to NGO
2. Sell your old electronics
3. Burn your e-waste
4. Give your e-waste to a certified e-waste recycler
 | 1 |
| 4. | Which of the following function returns an integer that indicates the position of the first occurrence of the sub-string within the string?1. INSTR( )
2. SUBSTR( )
3. LENGTH( )
4. STR( )
 | 1 |
| 5. | Rema is working on MySQL. She wants to count the employees not earning commission from the table emp. Which of the following is the correct statement for her?a. Select count(empno) from emp where commission is not null;b. Select count(empno) from emp where commission = null;c. Select count(empno) from emp where commission is null;d. Select commission(empno) from emp where commission =’null’; | 1 |
| 6. | Which of the following is not a valid chart type?a. line plotb. bar graphc. histogramd. statistical | 1 |
| 7. |  Which of the following crime(s) is/are covered under cybercrime?i. Stealing brand new hard disk from a shop.ii. Getting into unknown person’s social networking account and start messaging on his behalf.iii. Copying some important data from a computer without taking permission from the owner of the data.iv. Working on someone’s computer with his/her permission.a. only (ii) b. (ii) and (iv) c. (ii) and (iii) d. (iii) and (iv) | 1 |
| 8. | The \_\_\_\_\_\_\_\_\_\_ attribute of a dataframe object returns the row labels of adataframe.a. indexb. columnsc. rowsd. column | 1 |
| 9. | Which of the following is not a network device ?a. Repeaterb. hubc. TCPd. switch | 1 |
| 10. | What will be the output of the following statement? SELECT SQRT(36) + MOD(12,0);1. 6
2. 18
3. 0
4. NULL
 | 1 |
| 11. | Which of the following is not an aggregate function ?a. Avg()b. Trim()c. Min()d. Sum() | 1 |
| 12. | \_\_\_\_\_\_\_ is a type of intellectual property consisting of a symbol, word, or words legally registered or established by use as representing a company or product. a. Trademark b. Patent c. Copyright holder d. Plagiarism | 1 |
| 13. | A Dataframe object is a collection of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ type of dataa. Homogenousb. Heterogenousc. Hybridd. None of the above | 1 |
| 14. | The practice of taking confidential information from you through an originallooking site and URL is known asa. hackingb. fishingc. phishingd. Eavesdropping | 1 |
| 15. | Mr. John is a small businessman who runs a stationery shop. He has been experiencing problems with his small accounting department, which he depends on to provide sales reports. Mr. John wants to share information between his 7 computer stations and have on central printing area. What type of network would you recommend to Mr. John?  a. MAN  b. WAN  c. PAN  d. LAN | 1 |
| 16. | What will be the output of the following statement?SELECT LENGTH(MONTHNAME(“2023-10-20”));1. 6
2. 7
3. 10
4. 8
 | 1 |
| 17. | **Assertion (A) :** Free and open source software (FOSS) has a large community of users and developers who are contributing continuously towards adding new features or improving the existing features. **Reasoning (R) :** Windows operating system comes under FOSS.   i. Both A and R are true and R is the correct explanation for A ii. Both A and R are true and R is not the correct explanation for A iii. A is True but R is False iv. A is false but R is True | 1 |
| 18. | Assertion (A): The output of addition of two series will be NaN, if one of the  elements of both the elements have no value(s). Reason (R): While performing mathematical operations on a series, by default  all missing values are filled in with 0. i. Both A and R are true and R is the correct explanation for A ii. Both A and R are true and R is not the correct explanation for A iii. A is True but R is False iv. A is false but R is True | 1 |
|  | **SECTION B** |  |
| 19. | What is a web server? How is it different from web browser?**OR**What do you understand by the term cookies? Give any two benefits of cookies? | 2 |
| 20. | Carefully observe the following code:import pandas as pdSales1={'S1':5000,'S2':8000,'S3':12000,'S4': 18000}Sales2={'S1' :13000,'S2':14000,'S4':12000}totSales={1:Sales1 , 2:Sales2} df=pd.DataFrame(totSales)print(df)Write commands for the following along with the output:i. List the index of the DataFrame dfii. List the column names of DataFrame df. | 2 |
| 21. | Considering the same string “Computer”Write SQL commands to display: a. The position of the substring ‘ter’ in the string “Computer”. b. The first 5 letters of the string | 2 |
| 22. |  What will be the output of the following code:>>>import pandas as pd>>>rollno=[1,2,3,4,5,6]>>>marks=[23,86,74,11,98,75]>>>s=pd.Series(marks,index =rollno)>>>print(s[s>75]) | 2 |
| 23. |  Explain plagiarism with an example.**OR**Nowadays all of us frequently use social media to connect with our friends. Give any two netiquettes that we should follow while communication on social media. | 2 |
| 24. | Given two series S1 and S2 S1 S2A 39 A 10B 41 B 10 C 42 D 10D 44 F 10Find the output for following python pandas statements?a. print(S1 \* S2)b. print(S2[ : : -1]\*10) | 2 |
| 25. | Dr.Cooper, a database administrator needs to display department wise number of ‘ADMIN’ and ‘TEACHER’. He is not getting the expected output while executing the following query: **SELECT DEPARTMENT, SUM(\*) FROM SCHOOL GROUP BY DEPARTMENT WHERE DEPARTMENT=’ADMIN’ OR DEPARTMENT= ‘TEACHER’;** Help him in identifying the reason for the error and write the correct query by suggesting the possible correction (s).  | 2 |
|  | **SECTION C** |  |
| 26. |  Based on table STUDENT given here, write suitable SQL queries forthe following:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RollNo | Name | Class | Gender | City | Mark |
| 1 | Abhishek | XI | M | Agra | 430 |
| 2 | Prateek | XII | M | Mumbai | 440 |
| 3 | Sneha | XI | F | Agra | 470 |
| 4 | Nancy | XII | F | Mumbai | 492 |
| 5 | Hema | XII | F | Delhi | 360 |
| 6 | Anchal | XI | F | Dubai | 256 |
| 7 | Mehar | X | F | Moscow | 324 |
| 8 | Nishant | X | M | Moscow | 429 |

i. Display city wise average marks and number of students. ii. Display highest and the lowest marks in each class. iii. Display the records in the descending order of marks in class XII.**OR**Predict the output of the following queries based on the table STUDENT given above: i. SELECT LEFT(NAME,2) FROM STUDENT WHERE CITY= "AGRA"; ii. SELECT MAX(MARK)-MIN(MARK) "DMARK" FROM STUDENT  WHERE CLASS = "XII"; iii. SELECT SUM(MARK) "TOT MARK" FROM STUDENT WHERE  CITY LIKE "%B%";  | **3** |
| 27. | Kavya needs to arrange data of few elements in the form of **two series** containing symbols and their atomic numbers respectively. Therefore, the data of these two series has to be arranged and displayed in the form of Data Frame as shown below: Symbol AtomicNo Hydrogen H 1 Helium He 2 Lithium Li 3 Beryllium Be 4 Help her in writing suitable python code to complete the task.  | 3 |
| 28. |  Consider the tables PRODUCT and BRAND given below:Table: PRODUCT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PCode  |  PName  | UPrice | Rating | BID |   |
|  P01  |  Shampoo  | 120 | 6 | M03 |   |
|  P02  |  Toothpaste  | 54 | 8 | M02 |   |
|  P03  |  Soap  | 25 | 7 | M03 |   |
|  P04  |  Toothpaste  | 65 | 4 | M04 |   |
|  P05  |  Soap  | 38 | 5 | M05 |   |
|  P06  |  Shampoo  | 245 | 6 | M05 |   |

 Table: BRAND

|  |  |
| --- | --- |
| BID |  BName  |
| M02 |  Dant Kanti  |
| M03 |  Medimix  |
| M04 |  Pepsodent  |
| M05 |  Dove  |

  Write SQL queries for the following:1. Display product name and brand name from the tables PRODUCT and

 BRAND. ii. Display the average rating of Dove brands. iii. Display the name, price, and rating of products in descending order of  rating. | 2+1 |
| 29. |  Sudha received an email from her bank stating that there is a problem withher account. The email provides instructions and a link, by clicking on which she can logon to her account and fix the problem.i. What is this happening to Sudha?ii. What immediate action should she take to handle it?iii. Is there any law in India to handle such issues? Discuss briefly.**OR**What do you understand by hacking? Why is it a punishable offence? Mention any two ways to avoid hacking. | 3 |
| 30. | Consider the given DataFrame ‘shop’ APPLIANCE\_NAME DISCOUNT PRICE0 REFRIGERATOR 15 198001 SMART PHONE 20 223002 TELEVISION 22 129003 AIR CONDITIONER 15 235004 WASHING MACHINE 18 189005 WASHING MACHINE 15 20110Write the commands for the following:i. Add a column called Special\_Quantity with the following data: [62,26,12,32,48,52].ii. Add a new Electronics item named =’TELEVISION’, with discount =12 , price =35600 and special\_quantity = 20.iii. Remove the column Special\_Quantity. | 3 |
|  | **SECTION D** |  |
| 31. | Komal, a database administrator has designed a database for a Resort. Help her by writing SQL queries of the following questions based on the given relation: Table : Resort(i) To display the location and the lowest rent of the resorts for each location.(ii) To display the day of the recent startdate of the resorts in ‘GOA’.(iii) To display the location and number of resorts for each location, where each location has more than one resort.(iv) To count the number of resorts started in the month of March. | **4** |
| 32. | Mr. Som, a data analyst has designed the DataFrame df that containsdata about Computer Olympiad with ‘CO1’, ‘CO2’, ‘CO3’, ‘CO4’, ‘CO5’ asindexes shown below. Answer the following questions:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | School | Tot\_students | Topper | First\_Runnerup |
| CO1 | PPS | 40 | 32 | 8 |
| CO2 | JPS | 30 | 18 | 12 |
| CO3 | GPS | 20 | 18 | 2 |
| CO4 | MPS | 18 | 10 | 8 |
| CO5 | BPS | 28 | 20 | 8 |

Answer the following questions:i. Predict the output of the following python statement: a. print(df.shape)  b. print(df[2:4])ii. Write Python statement to display the data of Topper column of indexes  CO2 to CO4. iii. Delete the last row from the DataFrame.  **OR (Option for part iii only)**1. Write Python statement to add a new column “No\_Prize” that stores the difference between the Tot\_students and the sum of topper and First\_Runnerup of the above given DataFrame.(Tot\_students-(topper+First\_Runnerup))
 | 2+1+1 |
|  | **SECTION E** |  |
| 33. |  Write suitable SQL query using functions for the following:i. Display 6 characters extracted from 7th character from the string  ‘INDIA SHINING’.ii. Display the position of occurrence of string ‘COME’ in the string  ‘WELCOME WORLD’.iii. Round off the value 2385.78 to the nearest hundreds.iv. Display the remainder of 100 divided by 9.v. Remove all the expected leading and trailing spaces from a column userid of the table ‘USERS’.**OR**Table : PURCHASE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CNO | CNAME | CITY | QUANTITY | DOP |
| C01 | GURPREET | NEW DELHI | 150 | 2022-06-11 |
| C02 | MALIKA | HYDERABAD | 10 | 2022-02-19 |
| C03 | NADAR | DALHOUSIE | 100 | 2021-12-04 |
| C04 | SAHIB | CHANDIGARH | 50 | 2021-10-10 |
| C05 | MEHAK | CHANDIGARH | 15 | 2021-10-20 |

Help him in writing SQL queries to the perform the following task:i. Insert a new record in the table having following values: [‘C07’, ‘RAJEEV’,’NEW DELHI’,120,’2022-09-24’]ii. To change the value “CHANDIGARH” to “CHHATTISGARH” in city  column.iii. To remove the records of all purchase with quantity less than 50 .iv. To add a new column unitprice of suitable datatype.v. To display records of all purchases from Hyderabad. | 5 |
| 34. | Prime Computer services Ltd. is planning to set up its India campus at Mumbai with its head office in Delhi. The Mumbai office campus has four main buildings-ADMIN, ACCOUNTS, EXAMINATION and RESULT.You as a network expert have to suggest the best network relatedsolutions for their problems raised in (i) to (v), keeping in mind thedistances between the buildings and other given parameters.Shortest distances between various buildings:ADMIN TO ACCOUNTS 55 mADMIN TO EXAMINATION 90 mADMIN TO RESULT 50 mACCOUNTS TO EXAMINATION 55 mACCOUNTS TO RESULT 50 mEXAMINATION TO RESULT 45 mDELHI Head Office to MUMBAI CAMPUS 2150 kmNumber of computers installed at various buildings are as follows: ADMIN 110ACCOUNTS 75EXAMINATION 40RESULT 12DELHI HEAD OFFICE 20(i) Suggest the most appropriate location of the server inside the MUMBAI campus (out of the four buildings) to get the best connectivity for maximum number of computers. Justify your answer.(ii) Suggest and draw cable layout to efficiently connect various buildings within the MUMBAI campus for a wired connectivity. (iii) Which networking device will you suggest to be procured by the company to interconnect all the computers of various buildings of MUMBAI campus?(iv) Company is planning to get its website designed which will allow students to see their results after registering themselves on its server. Out of the static or dynamic, which type of website will you suggest?(v) Which of the following will you suggest to establish the online face to face communication between the people in the ADMIN office of Mumbai campus and Delhi head office?a) Cable TV b) Email c) Video conferencing d) Text chat | 5 |
| 35. | Write Python code to plot a bar chart for India’s medal tally as shownbelow:Also give suitable python statement to save this chart.ORWrite a python program to plot a line chart based on the given data todepict the changing weekly average temperature in Delhi for four weeks. Week=[1,2,3,4]Avg\_week\_temp=[40,42,38,44] | 5 |