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| **PRE-BOARD EXAM** | | | |
| **Subject: INFORMATICS PRACTICES (PYTHON)**  **Grade: XII** | | Max. Marks: 70Time: 3 hrs | |
| ***General Instructions:***  ***Answer Key*** | | | |
| Qno | PART A | | Mark |
|  | **SECTION - I**  **Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.** | |  |
| **1.** | Using someone else’s Twitter handle to post something will be termed as  a) Fraud b) Identity theft c)Online stealing d) Violation  And: Identity theft | | 1 |
| **2.** | Pyplot module’s -------------------- lets you create histograms   1. plot() b) histogram() c) hist() d) draw()   Ans: hist() | | 1 |
| **3.** | Write the output of the following SQL command.  select round(49.88,-1 );   1. 49.88 b) 40 c) 49.0 d) 50   Ans: 50 | | 1 |
| **4.** | Which method is used to calculate the average value of the dataset from a dataframe  a) iterrows() b) iteritems() c) mod() d) median()  Ans: median() | | 1 |
| **5.** | In Pandas , S is a series with the following data:  import pandas as pd  S=pd.Series([5,10,15,20,25]). Write the output of print(S[1:3])  Ans:   1. 10 2. **15** | | 1 |
| **6.** | State whether true or false.  We can specify different colors for different bars of a bar chart  Ans: True | | 1 |
| **7.** | Wi-Fi, Infrared and Bluetooth are examples of ------------------  Ans: Communication medium | | 1 |
| **8.** | Which function is used to rename an existing column or index   1. std() b) groupby() c) changename() d) rename()   Ans: rename() | | 1 |
| **9.** | Electronic junk mail or junk newsgroup posting are known as --------------  **Ans: Spam** | | 1 |
| **10.** | For web pages where the information is changed frequently, for example, stock prices, weather information which out of the following options would you advise ?   1. Static web page b) Dynamic web page 2. Justify your answer   **Ans: Dynamic web page since the information is frequently changing** | | 1 |
| **11.** | The len() function in MySql is an example of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   1. Math function b. String function c. Date Function d. Aggregate Function   **Ans: String function** | | 1 |
| **12.** | Which of these is not an example of unguided media   1. Optical fibre cable b) radio wave c) Bluetooth d) satellite   Ans: Optical fibre cable | | 1 |
| **13.** | In a dataframe , axis=0 is for   1. Columns b) rows c) rows and columns d) none of these   Ans: Rows | |  |
| **14.** | The practice of taking someone else's work or ideas and passing them off as one's own is known as \_\_\_\_\_\_\_\_\_\_\_\_\_.  Ans: Plagiarism | | 1 |
| **15 .** | What is a firewall in computer network   1. The physical boundary of network 2. An operating system of computer network 3. A system designed to prevent unauthorized access 4. A web browsing software   Ans: c | | 1 |
| **16.** | Each IP packet must contain   1. Only source address 2. Only destination address 3. Source and destination address 4. Source or destination address   Ans: c | | 1 |
| **17.** | The term IPR covers   1. Copy rights b) Trademarks c) Patent d) All of these   Ans: d | | 1 |
| **18.** | The \_\_\_\_\_\_\_\_\_\_\_\_command can be used to makes changes in the rows of a table in SQL.  Ans: DML | | 1 |
| **19.** | What values will not be considered by SQL while executing the following statement?  Select count(\*) from department;   1. Numeric value b) text value c) null value d) date value   Ans: null value | | 1 |
| **20.** | The protocol used for internet is -----------------  Ans:TCP/IP | | 1 |
| **21.** | A device used to connect dissimilar network is called ---------------  Ans: Gateway | | 1 |
|  | **Section -II**  **Both the case study based questions (22 & 23 ) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark .** | |  |
| **22.** | Given the dataframe df1 as shown below  City maxtemp mintemp rainfall  Delhi 40 32 24.1  Bengaluru 31 25 36.2  Chennai 35 27 40.8  Mumbai 29 21 35.2  Kolkatta 39 23 41.8   1. Write a command to compute sum of every column of the dataframe 2. Write a command to compute mean of column rainfall 3. Write a command to compute average maxtemp and mintemp and assigned to a column “average “ in dataframe 4. Write a command to display the maximum value of row 5. Write a command to display the maxtemp >=35 6. Df1.sum() 7. Df1[‘rainfall’].mean() 8. Df1[‘average’]=(Df1[‘maxtemp’]+Df1[‘mintemp])/2 9. Df1.max(axis=1) 10. Df1[‘maxtemp’]>=35   (1 mark each) | | 4 |
| **23** | Consider the following tables STORE     |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **ItemNo** | **Item** | **Scode** | **Qty** | **Rate** | **LastBuy** | | 2005 | Sharpner Classic | 23 | 60 | 8 | 2009-06-31 | | 2003 | Ball Pen 0.25 | 22 | 50 | 25 | 2010-02-01 | | 2002 | Gel Pen Premium | 21 | 150 | 12 | 2010-02-24 | | 2006 | Gel Pen Classic | 21 | 250 | 20 | 2009-03-11 | | 2001 | Eraser Small | 22 | 220 | 6 | 2009-01-19 | | 2004 | Eraser Big | 22 | 110 | 8 | 2009-12-05 | | 2009 | Ball Pen 0.5 | 21 | 180 | 18 | 2009-11-03 |      1. State the command that will give the output as   Item  Gel Pen Premium  Gel Pen Classic   1. select item from stores where item in (“Gel pen Premium”,”Gel pen classic’) 2. select item from stores where item =“Gel pen Premium” and item=”Gel pen classic’; 3. select item from stores where item like ‘g%’; 4. select item from stores where item like ‘%g’;   Choose the correct option:  a. Both (i) and (ii).  b. Both (iii) and (iv).  c. Any of the options (i) and iii  d. Only (iii)  Ans: c  (1 mark)   1. What will be the output of the following command?   Select \* from store where year(lastbuy) =2009 order by qty;  Ans:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **ItemNo** | **Item** | **Scode** | **Qty** | **Rate** | **LastBuy** | | 2005 | Sharpner Classic | 23 | 60 | 8 | 2009-06-31 | | 2004 | Eraser Big | 22 | 110 | 8 | 2009-12-05 | | 2009 | Ball Pen 0.5 | 21 | 180 | 18 | 2009-11-03 | | 2001 | Eraser Small | 22 | 220 | 6 | 2009-01-19 | | 2006 | Gel Pen Classic | 21 | 250 | 20 | 2009-03-11 |   (1 mark)   1. Prachi has given the following command to obtain the highest marks   Select max(qty) from store where group by scode;  but she is not getting the desired result. Help her by writing the correct command.  a. Select max(qty) from store where group by scode;  b. Select scode, max(qty) from store group by scode;  c. Select scode, max(qty) group by class from store;  d. Select scode, max(qty) from store group by scode;  Ans:b  (1 mark)   1. State the command to display the average qty of each scode whose code is in 21 or 22   Ans: select avg(qty) from store group by scode having scode in(21,22);   1. Help Ritesh to write the command to display the lastbuy of the recent bought item?   a. select min(lastbuy) from store ;  b. select max(lastbuy) from store ;  c. select min(lastbuy) from store group by item ;  d. select maximum(lastbuy) from store;  Ans:b  (1 mark) | | 4 |
|  | **Part - B Section – I** | |  |
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| **24.** | Create a Series with the data [5,10,15,20,25] and assign the index [‘a’,’b’,’c’,’d’,’e’] and display the first 5 elements from the series  Ans:  import pandas as pd  S=pd.Series([5,10,15,20,24],index=[‘a’,’b’,’c’,’d’,’e’])  print(S[:5])  (½ mark for module)  (1 mark for series creation)  (½ mark for print) | | 2 |
| **25.** | What is the difference between Primary key and Unique key  OR  What is aggregate functions? Explain any two with example  Primary key – It is a set of one or more attributes that can uniquely identifies the tuples in a relation. It can not contain null values as well duplicate values  Unique key – is a key can contain null values but does not allow duplicate values  OR  Aggregate functions work on multiple rows. Example sum(), count(\*/<column>)  (2 marks for correct answer) | | 2 |
| **26.** | Consider the decimal number x with value 87890.34512. Write commands in SQL to:   1. round it to two decimal places 2. round it to 2 places before the decimal.   Ans: i) select round(87890.34512,2);  ii) select round(87890.34512,-2);  (1 mark each) | | 2 |
| **27.** | Create a series S with the data [5,10,15,20,25] and assign the index [‘a’,’b’,’c’,’d’,’e’]  Ans:  import pandas as pd  S=pd.Series([5,10,15,20,24],index=[‘a’,’b’,’c’,’d’,’e’])  print(S)  (½ mark for module)  (1 mark for series creation)  (½ mark for print) | | 2 |
| **28.** | A table STUDENT has 5 rows and 3 columns. . What will be the cardinality and degree? Now 2 rows added and 1 column deleted then what will be the degree and cardinality .  Ans: cardinality=5 degree=3 (1 mark)  cardinality=7 degree=2 (1 mark) | | 2 |
| **29.** | Consider the following SQL string: “Informatics Practices” Write commands to display:  a. “form”  b. “ces”  OR  Considering the same string “Informatics Practices” Write SQL commands to display:  a. the position of the substring “atic” in the string “Informatics Practices”  b. the last 4 letters of the string  Ans:   1. Select substr(‘Informatics Practices’,3,4); (1 mark) 2. Select right(‘Informatics Practices’,3); (1 mark)   OR   1. Select instr(‘informatics practices’,’atic’); (1 mark) 2. Select right(‘Informatics Practices’,4); (1 mark) | | 2 |
| **30.** | Create a dataframe with appropriate headings from the list given below  [‘S101’,’Amy’,70],[‘S102’,’Bandhi’,69],[‘S103’,’Cathy’,75], [‘S104’,’Gard’,82]  where ‘S101’ is ID , ‘Amy’ is Name and 70 is Mark  Ans:  import pandas as pd  data=[[‘S101’,’Amy’,70],[‘S102’,’Bandhi’,69],[‘S103’,’Cathy’,75], [‘S104’,’Gard’,82]]  df=pd.DataFrame(data,columns=[‘ID’,”NAME’,’MARK’])  print(df)  (½ mark for module)  (½ mark for data creation)  (1 mark for dataframe creation) | | 2 |
| **31.** | Expand the following terms related to Computer Networks:  a. SMTP - Simple Mail Transfer Protocol  b. POP - Post Office Protocol)  c . TCP/IP - Transmission Control Protocol/ Internet Protocol  d.VoIP – Voice over Internet Protocol  (½ mark each) | | 2 |
| **32.** | What is cyber stalking  Ans:  Cyber stalking is defined as the unlawful act of harassing a person or collecting an individual’s private information using electronic network.  (2 marks for correct answer) | | 2 |
| **33.** | What is spam mail  Ans:  Spam is the abuse of electronic messaging systems, to send unsolicited bulk messages indiscriminatively.  (2 marks for correct answer) | | 2 |
|  | **Section II** | |  |
| **34.** | Create a series that stores the area of some states in km2 , write code to find out the largest and the smallest three areas from the given series.  Ans:  Import pandas as pd  Ar=eval(input(“enter area”))  S1=pd.Series(Ar)  print(“Top 3 largest areas are “, S1.sort\_values().tail(3),sep=’\n’)  print(“3 smallest areas are “,S1.sort\_values().head(3),sep=’\n’)  (½ mark for module)  (½ mark for data input)  (½ mark for series creation)  (1 mark for largest)  (½ mark for smallest) | | 3 |
| **35.** | Explain phishing  OR  List three points of network security components  Ans:  Phishing is the fraudulent attempt to obtain sensitive information such as usernames, passwords and credit card details , often for malicious reasons, by disguising as a trustworthy entity in an electronic communication .Phishing is typically carried out by email spoofing or instant messaging , and it often directs users to enter personal information at a fake website, the look and feel of which is identical to the legitimate one and the only difference is the URL of the website in question  OR  The three network security components are   * Anti virus and anti spyware * Firewall, to block unauthorized access to your network * Instruction Prevention Systems to identify fast spreading threats such as zero-day or zero-hour attacks   (3 marks for correct answer) | | 3 |
| **36.** | Consider the following graph . Write the code to plot it.      Ans:  import matplotlib.pyplot as plt  x=[1,2,3]  y=[2,4,1]  plt.plot(x,y)  plt.xlabel("X-Axis")  plt.ylabel("Y-Axis")  plt.title("Sample Graph")  plt.show()  OR  Draw the following bar graph representing the number of students in each class.    Ans:  import matplotlib.pyplot as plt  x=['Dotnet','C++','Java','Python','C','Perl']  y=[8,10,9,20,4,1]  plt.bar(x,y)  plt.xlabel("X-Axis")  plt.ylabel("Y-Axis")  plt.title("Programming Language Usage")  plt.show()  (½ mark for module)  (½ mark for input)  (½ mark for plot/bar)  (½ mark for label)  (½ mark for title)  (½ mark for show) | | 3 |
| **37.** | Consider the table GRADUATE   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **S.NO** | **NAME** | **STIPEND** | **SUBJECT** | **AVERAGE** | **DIV.** | | 1 | KARAN | 400 | PHYSICS | 68 | 1 | | 2 | DIWAKAR | 450 | COMP. Sc. | 68 | 2 | | 3 | DIVYA | 300 | CHEMISTRY | 62 | 3 | | 4 | REKHA | 350 | PHYSICS | 63 | 2 |   Write SQLcommands to:  a. Display the average stipend of each subject having division more than 1.  b. Count the type of graduate offered by each subject.  c. Display the different subjects.  Ans:   1. Select avg(stipend) ,subject from graduate group by subject; 2. Select count(\*),subject from graduate group by subject; 3. Select distinct subject from Graduate;   (1 mark each) | | 3 |
|  | **SECTION - III** | |  |
| **38.** | Write a program in Python Pandas to create the following DataFrame Teacher from a Dictionary: T\_NO Name Salary Bonus  1 Harini 8000 800  2 Madhav 4000 250  3 Goel 7000 900  4 Kartik 8000 760  Perform the following operations on the DataFrame :  1)Add both the Salary and Bonus and assign to column “Total”  2)Display the highest value in both Salary and Bonus of the DataFrame.  3)Display the DataFrame  Ans:  import pandas as pd  d={'T\_NO':[1,2,3,4], 'Name':["Harini","Madhav","Goel","Kartik"],'Salary':[8000,4000,7000,8000], 'Bonus':[800,250,900,760] }  df=pd.DataFrame(d1)  print(df)  df['Total'] = df['Salary']+ df['Bonus']  print(‘Maximum salary = “,df[‘Salary’].max())  print(“Maximum Bonus= “,df[‘Bonus’].max())  (1 mark for import statement)  (2 marks for creating the dataframe )  (1 mark for creating column Total to hold the sum of salary and bonus)  (1 mark for displaying highest scores in Salary and bonus) | | 5 |
| **39.** | Write SQL commands for the following queries (i) to (v) based on the relations Items and Traders.     1. To display details of all items in descending order of Qty 2. To display maximum price by each company 3. To display all information of items where the price is more than 8000 or company is “XENTIA”. 4. To display the IName , Code and Company name of all Items whose price is within the range 8000 and 11000. 5. To display IName and Company of items whose price is greatet than 5000 and name start with ‘D’   Ans:   1. Select \* from items order by qty desc; 2. Select max(price), company from items group by company; 3. Select \* from items where price>8000 or company=’XENTIA’; 4. Select iname,code,company from items where price between 8000 and 11000; 5. Select iname,company from items where price>5000 and iname like ‘D%’;   (1 mark each)  OR  Write the SQL functions which will perform the following operations:   1. To display the year of the current date . 2. To display the length of a string “ Information practices “ after removing left and right spaces 3. To display the name of the day eg, Friday or Sunday from your date of birth, dob. 4. To display the first 3 character of employee name from table emp (the column name is ename) 5. To compute the power of n1 raised to n2   Ans:   1. Select year(curdate()); 2. Select len(trim(“ Information Practices “)); 3. Select dayanme(‘1984-11-16’); 4. Select left(ename,3) from emp; 5. Select pow(n1,n2);   (1 mark each) | | 5 |
| **40.** | A famous ABC company has 4 wings of buildings as shown in the diagram    Center to center distances between various Buildings:  W3 to W1 - 50m  W1 to W2 - 60m  W2 to W4 - 25m  W4 to W3 - 170m  W3 to W2 - 125m  W1 to W4 - 90m  Number of computers in each of the wings:  W1 - 150 W2 - 15 W3 - 15 W4 - 25  Computers in each wing are networked but wings are not networked The company has now decided to connect the wings also.   1. Suggest a most suitable cable layout for the above connections. 2. Suggest the most appropriate topology of the connection between the wings. 3. The company wants internet accessibility in all the wings. Suggest a suitable technology 4. Suggest the placement of the following devices with justification if the company wants minimized network traffic a) Repeater b) Hub / switch. 5. The company is planning to link its head office situated in New Delhi with the offices in hilly areas. Suggest a way to connect it economically. 6. Most suitable layout according to distance is Bus      1. Star topology 2. Broad band 3. a. Not required. Repeaters may be skipped as per above layout (because distance is less than 100 m)   b. In every wing  v. Radio waves  (1 mark for each) | | 5 |

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