PREBOARD EXAMINATION

Class: XII | Sub: Computer Science (083) | SET-I

TIME: 3 hrs **MM: 70**

Q.No	SECTION-A (21 × 1 = 21 Marks)	Marks
Q1	State if the following statement is True or False: `pow()` function of math module will always return float type of value.	**1**

Q2	What will be the output of the following code?
	`L = ["Computer Science", "Java", "Python"]`
	`print(L[1][0].lower() + L[2][-1].upper() + L[1][1])`
	a) jna b) jNa c) JNA d) can
		1

Q3	Consider the given expression: `print(19 < 10 and 129 > 119 or not 15 > 30)` Which of the following will be the correct output of the given expression? a) True b) False c) Null d) No output	**1**
Q4	In SQL, to join two tables one column in both the tables must be an identical column. (True/False)	**1**

Q5	What will be the output of the following Python code?
	`str = "ArtifIcIal inteligence"`
	`print(str[3:-11:3])`
	a) Icl b) icl c) ili d) ic
		1

Q6	Write the output of the following Python code :
	`for k in range(40, 5, -10):`
	`  print(str(k) + '@', end='')`
		1

Q7	What will be the output of the following Python statement: `print(10 % 4 ** 2 ** 0 + 60 / 12)`	**1**
Q8	Consider the given SQL Query: `SELECT SUM(SALARY) FROM employees GROUP BY department WHERE COUNT(*) > 5;` Preeti is executing the query but not getting the correct output. Write the correction.	**1**

Q.No	SECTION-A (21 × 1 = 21 Marks)	Marks

Q9	What will be the output of the following Python code?
	`try:`
	`  x = 10 / p`
	`except:`
	`  print("Some other error!")`
	`except ZeroDivisionError:`
	`  print("Division by zero error!")`
	a) Division by zero error! b) Some other error!
	c) ZeroDivisionError d) Nothing is printed
		1

Q10	What will be the output of the following Python code?
	`my = {"name": "Anip", "age": 27, "city": "Lucknow"}`
	`print(my.pop())`
	a) lucknow b) Anip c) None d) Lucknow
		1

Q11	What will be the possible outcome/s on the screen when following code will be executed? Write minimum and maximum value of R also.
	`import random`
	`Signal = ['Stop', 'Wait', 'Go']`
	`for K in range(2, 0, -1):`
	`  R = randrange(K)`
	`  print(Signal[R], end='#')`
	(a) Stop # Wait # Go # (b) Wait # Stop #
	(c) Go # Wait # (d) Go # Stop #
		1

Q12	What will be the output of the following Python code?
	`i = 10`
	`print(i, end='#')`
	`def add():`
	`  global i`
	`  i += 100`
	`  print(i + 10, end='@')`
	`add()`
	`print(i)`
	a) 10#120@120 b) 10#120@110
	c) 10#110@110 d) 10@120#110
		1

Q13	Which SQL command can change the Degree of an existing relation? a) Insert b) Alter Table c) Update d) Drop	**1**

Q14	What is the output of the given Python code?
	`st = 'Ooh my god'`
	`print("**".join((st.split("o"))))`
	a) O**h my g**d
		1

Q.No	SECTION-A (21 × 1 = 21 Marks)	Marks
Q15	In SQL, a relation consists of 15 columns and 16 rows. If 11 columns and 13 rows are deleted from an existing relation, what will be the updated degree and cardinality of a relation? a) Degree: 3 Cardinality: 3 b) Degree: 4 Cardinality: 3 c) Degree: 5 Cardinality: 4 d) Degree: 15 Cardinality: 16	**1**
Q16	Which SQL command is used to delete a row from a table in MySQL? a) UPDATE b) ALTER c) DROP d) DELETE	**1**
Q17	_____ is a protocol used for WhatsApp group call. a) SMTP b) FTP c) POP3 d) VoIP	**1**
Q18	Which of the following network device is responsible for broadcasting data on network? a) Switch b) Repeater c) Hub d) RJ45	**1**
Q19	Which of the following protocol is responsible for dividing message into packets? a) IP b) TCP c) POP d) FTP	**1**
	Q20 and Q21 are Assertion(A) and Reason(R) based questions. Mark the correct choice as: a) Both A and R are True and R is the correct explanation for A. b) Both A and R are True and R is not the correct explanation for A. c) A is True but R is False. d) A is False but R is True.	
Q20	**Assertion (A):** The data type of a variable is taken according to the type of value assigned to it in python. **Reasoning (R):** Data types do not require initialization at the time of declaration in python. This process is described as Dynamic Typing.	**1**
Q21	**Assertion (A):** A Join is a query that combines rows from two or more tables. **Reasoning (R):** Equi-joins are joins based on equality conditions.	**1**

Q.No	Section-B (7 × 2 = 14 Marks)	Marks
Q22	A. Differentiate between a Global and a Local variable in Python. Explain how the `global` keyword is used to modify a global variable inside a function. **OR** B. State the rules for defining a valid Identifier in Python. Which of the following are invalid identifiers: `_price`, `1st_day`, `if`, `Total_Amount`?	**2**

Q.No	Section-B (7 × 2 = 14 Marks)	Marks

Q23	The code below aims to define a function that counts the number of lowercase vowels (a, e, i, o, u) in a given sentence. Find and fix all errors.
	`def count_vowels(sentence:`
	`  vowel_count = 0`
	`  for char in sentence:`
	`  if char == 'a' or 'e' or 'i' or 'o' or 'u':`
	`  vowel_count = vowel_count + 1`
	`  count_vowels return`
	`my_string = "Programming"`
	`total_vowels = count_vowels(my_string)`
	`print("Vowel Count:" total_vowels)`
		2

Q24	A. (Answer using Python built-in methods/functions only):
	I. Write a statement to return the maximum value from the dictionary `D1` (which has integer values).
	II. Write a statement to convert a list named `data_list` into a tuple named `data_tuple`.
	OR
	B. Predict the output of the following Python code:
	`phrase = "To be or not to be here"`
	`print(phrase.replace("be", "see"))`
	`print(phrase.split("be"))`
		2

Q25	A. Write a function `validate_password(password)` in Python that accepts a string `password`. Return `True` if the password is valid, otherwise `False`. A valid password must be: at least 8 characters long, contain at least one digit, and contain at least one uppercase letter. **OR** B. Write a function `get_duplicate_elements(L)` in Python that accepts a list `L`. It should return a set containing only the elements that appear more than once in the original list.	**2**

Q26	Predict the output of the following Python code:
	`records = {`
	`  101: ('Alice', [50, 45]),`
	`  102: ('Bob', [60, 40])`
	`}`
	`total_score = 0`
	`for emp_id, data in records.items():`
	`  scores = data[1]`
	`  average = sum(scores) / len(scores)`
	`  if average > 48:`
	`  records[emp_id] = data[0].upper()`
	`  total_score += scores[0]`
	`print(records[101])`
	`print(total_score)`
		2

Q.No	Section-B (7 × 2 = 14 Marks)	Marks
Q27	A. Write suitable commands to do the following in MySQL. I. Write a command to display only the unique values from the column `City` in the table `Customers`. II. Write a command to make the database `School` the current/active database for subsequent operations. **OR** B. Differentiate between the `PRIMARY KEY` constraint and the `UNIQUE` constraint in SQL with respect to allowing NULL values and their role in a table.	**2**
Q28	A. I. Differentiate between a Router and a Gateway based on their primary function and the types of networks they connect. II. Define PAN and MAN. Which of the two is most likely to use a dedicated Fiber-optic link? **OR** B. I. Differentiate between a Web Server and a Web Browser concerning their role in the client-server architecture. II. Define URL and Domain Name. Give an example of a Domain Name in a typical URL.	**2**

Q.No	Section-C (3 × 3 = 9 Marks)	Marks
Q29	A) Write a Python function `count()` that receives a character as an argument and displays the number of times that character appears in a text file named `"Prog.txt"`. **OR** B) Define Python function `Lines()` to read lines from a text file `STORIES.TXT` & display the lines which start with word "The" or "An".	**3**
Q30	A list containing records of products as: `L = (("Aman", 90), ("Manish", 35), ("Punit", 80), ("Hina", 50))` Write the following user-defined functions to perform operations on a stack named `Product` to: I. `Push_element()`: To push name of student where percentage is greater than 50 into the stack named `"stk"`. II. `Pop_element()`: To pop names from the stack `"stk"` and display them. Also, display "Stack Empty" when there are no elements in the stack. Output: Punit Aman STACK EMPTY	**3**

Q.No	Section-C (3 × 3 = 9 Marks)	Marks

Q31	A. Predict the output of the following Python code:
	`s1 = "BoaRD 25-26"`
	`s2 = ""`
	`i = 0`
	`while i < len(s1):`
	`  if s1[i] >= '0' and s1[i] <= '9':`
	`  s2 = s2 + str(int(s1[i]) - 1)`
	`  elif s1[i].isupper():`
	`  s2 = s2 + s1[i+1]`
	`  elif s1[i].islower():`
	`  s2 = s2 + '@'`
	`  i += 1`
	`print(s2)`
	OR
	B. Predict the output of the following Python code:
	`wildlife = {"Kaziranga": 9, "Ranthambhore": 12, "Jim Corbett": 15, "Sundarbans": 17, "Periyar": 10}`
	`out = {}`
	`for i, j in wildlife.items():`
	`  if j > 10:`
	`  out[j] = i[1:-1].upper()`
	`print("Output=", out)`
		3

<table>
<tr><th>Q.No</th><th>Section-D (4 × 4 = 16 Marks)</th><th>Marks</th></tr>
<tr><td>Q32</td><td>Consider the table SALES as given below:
<table>
<tr><th>sale_id</th><th>product</th><th>cust_name</th><th>qty_sold</th><th>price</th></tr>
<tr><td>5001</td><td>Laptop</td><td>John Doe</td><td>5</td><td>50000</td></tr>
<tr><td>5002</td><td>Smartphone</td><td>Jane Smith</td><td>10</td><td>30000</td></tr>
<tr><td>5003</td><td>Tablet</td><td>MichaelLee</td><td>3</td><td>15000</td></tr>
<tr><td>5004</td><td>Headphones</td><td>SarahBrown</td><td>7</td><td>2000</td></tr>
<tr><td>5005</td><td>Smartwatch</td><td>EmilyDavis</td><td>8</td><td>8000</td></tr>
<tr><td>5006</td><td>Smartwatch</td><td>David</td><td>3</td><td>16000</td></tr>
<tr><td>5007</td><td>Tablet</td><td>Mark</td><td>5</td><td>34000</td></tr>
</table>
A. Write the following queries:
I. To display the maximum price for each product.
II. To display customer name and product name where customer name starts with 'J' and product name ends with 'e'.
III. To display different sold quantities in table SALES.
IV. To display records where price is in the range of 10000 to 20000.
OR
B. Predict the output of the following:
I. <code>SELECT min(price) FROM Sales where product='Smartwatch';</code>
II. <code>SELECT sales_id, customer_name FROM Sales WHERE quantity_sold > 7 order by quantity_sold;</code>
III. <code>SELECT COUNT(*) FROM Sales WHERE product in ('Smartphone', 'Smartwatch');</code>
IV. <code>SELECT AVG(price) FROM Sales where price > 20000;</code></td><td>4</td></tr>
<tr><td>Q33</td><td>Raj is the manager of a General store. To keep track of sales records, he has created a CSV file named <code>Report.csv</code>, which stores the details of each sale. The columns of the CSV file are: <code>P_ID</code>, <code>P_Name</code>, <code>Q_Sold</code> and <code>Price</code>.
Help him to efficiently maintain the data by creating the following user-defined functions:
I. <code>INPUT()</code> – to accept n sales record from the user and add it to the file <code>Sales.csv</code>.
II. <code>Calc()</code> - to find sum of all quantity and price separately & return it.</td><td>4</td></tr>
</table>

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<tr><th>Q.No</th><th>Section-D (4 × 4 = 16 Marks)</th><th>Marks</th></tr>
<tr><td>Q34</td><td>Pranav is managing a School and needs to access certain information from the Faculty and Courses tables. Help him extract the required information by writing the appropriate SQL queries as per the tasks mentioned below:
Table: FACULTY
<table>
<tr><th>FID</th><th>FName</th><th>LName</th><th>Hire Date</th><th>Salary</th></tr>
<tr><td>102</td><td>Amit</td><td>Mishra</td><td>12-10-1998</td><td>12000</td></tr>
<tr><td>103</td><td>Nitin</td><td>Vyas</td><td>24-12-1994</td><td>8000</td></tr>
<tr><td>104</td><td>Rakshit</td><td>Soni</td><td>18-05-2001</td><td>NULL</td></tr>
<tr><td>105</td><td>Rashmi</td><td>Malhotra</td><td>NULL</td><td>11000</td></tr>
<tr><td>106</td><td>Sulekha</td><td>Srivastava</td><td>05-06-2006</td><td>10000</td></tr>
</table>
Table: COURSES
<table>
<tr><th>CID</th><th>FID</th><th>CName</th><th>Fees</th></tr>
<tr><td>C21</td><td>102</td><td>Grid Computing</td><td>40000</td></tr>
<tr><td>C22</td><td>106</td><td>System Design</td><td>16000</td></tr>
</table>
I. To increase salary of employees by 10% where HIRE_DATE IS given.
II. To delete all employees where Last name ends with 'a'.
III. To insert a new record in table COURSES.
IV. To display First name of faculty and Course name where salary less than equal to 10000.
OR
To display First name and Salary of Faculty where course fee is 40000.</td><td>4</td></tr>
<tr><td>Q35</td><td>A MySQL database named as <code>product</code>, has <code>inventory</code> table that contains the following attributes:
• <code>I_code</code>: Item code (Integer)
• <code>P_name</code>: Name of product (String)
• <code>Cost</code>: Cost of product (Integer)
• <code>Qty</code>: Quantity of product (Integer)
Consider the following details for Python-MySQL connectivity:
• Username: admin Password: Data Host: localhost
Write a Python program:
i) To change the <code>P_name</code> of the product from "Pencil" to "Pen" in the <code>inventory</code> table.
ii) To display all the records where cost of product is either 2000, 3000 or 4000.</td><td>4</td></tr>
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<tr><th>Q.No</th><th>Section-E (2 × 5 = 10 Marks)</th><th>Marks</th></tr>
<tr><td>Q36</td><td>Gautam, a manager at a tech company, needs to maintain records of employees. Each record should include: <code>Employee_ID</code>, <code>Employee_Name</code>, <code>Department</code> and <code>Salary</code>. Write the Python functions to:
I. Write an employee details in a binary file <code>emp.dat</code>
II. Increase salary of sales and accounts departments employee by 10%
III. Read and display employee details with salary above 60,000</td><td>5</td></tr>
</table>

<table>
<tr><th>Q.No</th><th>Section-E (2 × 5 = 10 Marks)</th><th>Marks</th></tr>
<tr><td>Q37</td><td>Dhanvridhhi Investment Pvt. Ltd. has four branches in a Campus in Chattisgarh, named Durg, Bhilai, Raipur and Charoda. The company wants to establish the networking between all the four offices. A rough layout of the same is as follows:

Raipur Durg

Charoda Bhilai

Approximate distances between these offices as per network survey team are:

<table>
<tr><th>Place From</th><th>Place To</th><th>Distance</th></tr>
<tr><td>Durg</td><td>Bhilai</td><td>30m</td></tr>
<tr><td>Bhilai</td><td>Charoda</td><td>40m</td></tr>
<tr><td>Charoda</td><td>Raipur</td><td>25m</td></tr>
<tr><td>Durg</td><td>Raipur</td><td>150m</td></tr>
<tr><td>Bhilai</td><td>Raipur</td><td>105m</td></tr>
<tr><td>Durg</td><td>Charoda</td><td>60m</td></tr>
</table>
In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

<table>
<tr><th>Office</th><th>No. of computers</th></tr>
<tr><td>Durg</td><td>40</td></tr>
<tr><td>Bhilai</td><td>80</td></tr>
<tr><td>Charoda</td><td>200</td></tr>
<tr><td>Raipur</td><td>60</td></tr>
</table>
(i) Suggest the most suitable place (i.e., Block/Center) to install the server of this organization with a suitable reason.
(ii) Name the device and its placement to:- [a] efficiently connect all the computers within these offices? [b] to regenerate and amplify signals
(iii) The organization is planning to connect its new office in Delhi, which is more than 1250 km current location. Which type of network out of LAN, MAN, or WAN will be formed? Justify your answer.
(iv) Which of the following will you suggest to establish the online face-to-face communication between the people in the Chattisgarh offices and Mumbai Head Office?
a) Cable TV b) E-Mail c) Video Conferencing d) Text Chat
(v) What is the difference between a Web Site and Web Hosting?

OR

Explain the concept of Domain Names and their necessity, and state the protocol used to map them to IP Addresses.</td><td>5</td></tr>
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