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## SAMPLE PAPER - 1 (2023-24)

## XII - COMPUTER SCIENCE (083)

Time allowed: 3 Hours

Maximum Marks: 70

**General Instructions:**

- Please check this question paper contains 35 questions.
- The paper is divided into 5 Sections- A, B, C, D and E.
- Section A, consists of 18 questions (1 to 18). Each question carries 1 Mark.
- Section B, consists of 7 questions (19 to 25). Each question carries 2 Marks.
- Section C, consists of 5 questions (26 to 30). Each question carries 3 Marks.
- Section D, consists of 2 questions (31 to 32). Each question carries 4 Marks.
- Section E, consists of 3 questions (33 to 35). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.

Q.NO	QUESTION	MARKS
<b>SECTION - A</b>		
1	Which of the following is a keyword in Python? a) true                      b) For                      c) pre-board                      d) False	1
2	What will be the output for the following Python statement? <code>print(20//3*2+(35//7.0))</code> a) 17.0                      b) 17                      c) 8.5                      d) 8	1
3	In MYSQL database, if a table, BOOK has degree 8 and cardinality 7, and another table, SALE has degree 4 and cardinality 7, what will be the degree and cardinality of the Cartesian product of BOOK and SALE ? a) 32 , 49                      b) 12, 49                      c) 12 ,14                      d) 32,14	1
4	What is “ C “ stands in TCP/IP ? a) Common                      b) Centre                      c)Control                      d) Coordinate	1
5	What is printed by the following statements? <code>ANIMAL={"dog":10,"tiger":5,"elephant":15,"Cow":3}</code> <code>print("Tiger" not in ANIMAL)</code> a) True                      b)False                      c)Error                      d) None	1
6	Consider the following statements and choose the correct output from the given options : <code>EXAM="COMPUTER SCIENCE"</code> <code>print(EXAM[:12:-2])</code> a) EN                      b) CI                      c)SCIENCE                      d) ENCE	1
7	What will be the output of the following code ? <code>Tuple1=(10,)</code>	1

	<p> <code>           Tuple2=Tuple1*2           print(Tuple2)         </code> </p> <p>           a) 20                      b) (20,)                      c) (10,10)                      d) Error         </p>	
8	<p>Fill in the blanks:</p> <p>The SQL keyword ----- is used in SQL expression to select records based on patterns</p>	1
9	<p>What possible outcome will be produced when the following code is executed?</p> <pre> import random value=random.randint(0,3) fruit=["APPLE","ORANGE","MANGO","GRAPE"] for i in range(value):     print(fruit[i],end='##')     print() </pre> <p>           a) APPLE##            b) APPLE#               ORANGE##            c) APPLE## ORANGE##            d) ORANGE##               MANGO##               APPLE##         </p>	1
10	<p>Select the network device from the following, which connects, networks with different protocols</p> <p>           a) Bridge                      b) Gateway                      c) Hub                      d) Router         </p>	1
11	<p>State whether the following statement is TRUE or FALSE :</p> <p>The value of the expression <math>4/3*(2-1)</math> and <math>4/(3*(2-1))</math> is the same</p>	1
12	<p>In the relational models , cardinality actually refers to -----</p> <p>           a) Number of tuples                      b) Number of attributes            c) Number of tables                      d) Number of constraints         </p>	1
13	<p>Data structure STACK is also known as ----- list</p> <p>           a) First In First Out                      b) First In Last Out            c) Last In First Out                      d) Last In Last Out         </p>	1
14	<p>Which function is used to write a list of strings in a file?</p> <p>           a) <code>writeline()</code>    b) <code>writelines()</code>    c) <code>write()</code>    d) <code>writeall()</code> </p>	1
15	<p>Which of the following is NOT a guided communication medium?</p> <p>           a) Twisted pair cable                      b) Microwave            c) Coaxial cable                      d) Optical fibre         </p>	1
16	<p>Which of the following function header is correct?</p> <p>           a) <code>def fun(a=1,b):</code>            b) <code>def fun(a=1,b,c=2):</code>            c) <code>def fun(a=1,b=1,c=2):</code>            d) <code>def fun(a=1,b=1,c=2,d):</code> </p>	1
	<p>Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as</p> <p>           (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         </p>	

	(d) A is false but R is True	
17	<p><b>Assertion (A):</b> In SQL, the aggregate function avg() calculates the average value on a set of values and produces a single result.</p> <p><b>Reason (R):</b> The aggregate functions are used to perform some fundamental arithmetic tasks such as min(), max(), sum() etc</p>	1
18	<p><b>Assertion(A):</b> Python overwrites an existing file or creates a non-existing file when we open a file with 'w' mode.</p> <p><b>Reason(R):</b> a+ mode is used only for writing operations</p>	1
<b>SECTION - B</b>		
19	<p>i) Expand the following :</p> <p style="padding-left: 40px;">a) SMTP      b) VoIP</p> <p>ii) Give one disadvantage of Star topology</p> <p style="text-align: center;"><b>OR</b></p> <p>i) What is a web browser ?</p> <p>ii) Define the term MAC Address</p>	1+1=2
20	<p>Rewrite the following code in Python after removing all syntax error(s) and underline each correction done in the code .</p> <pre> 30 = num for k in range(0,num)     IF k%4==0 :         print(k*4) Else:     print(k+3) </pre>	2
21	<p>Write a function letter_count(lst) that takes a list of string and returns a dictionary where the keys are the letters from lst and the values are the number of times that letter appears in the lst.</p> <p>For example: if the passed list, lst is :</p> <pre>lst=list("apple")</pre> <p>Then it should return a dictionary as {'a':1,'p':2,'l':1,'e':1}</p> <p style="text-align: center;"><b>OR</b></p> <p>Write a function max_length( ), that takes a list of string as argument and display the longest string from the list.</p>	2
22	<p>Predict the output of the following code:</p> <pre> lst=[2,4,6,8,10] for i in range(1,5):     lst[i-1]=lst[i] for i in range(0,5):     print(lst[i],end=' ') </pre>	2
23	<p>Consider the following list of elements and write Python statement to print the output of each question.</p> <pre>elements=['apple',200,300,'red','blue','grapes']</pre> <p>i) print(elements[3:5])</p> <p>ii) print(elements[::-1])</p>	2

	<b>OR</b>	
	<p>Consider the following list exam and write Python statement for the following questions:</p> <p><b>exam=['english','physics','chemistry','cs','biology']</b></p> <p>i) To insert subject "maths" as last element</p> <p>ii) To display the list in reverse alphabetical order</p>	
24	<p>Satheesh has created a database "school" and table "student". Now he wants to view all the databases present in his laptop. Help him to write SQL command for that , also to view the structure of the table he created.</p> <p style="text-align: center;"><b>OR</b></p> <p>Meera got confused with DDL and DML commands. Help her to select only DML command from the given list of command. UPDATE , DROP TABLE, SELECT , CREATE TABLE , INSERT INTO, DELETE , USE</p>	2
25	<p>Predict the output for the following Python snippet</p> <pre>def calc(p,q=3):     ans=1     for x in range(q):         ans=ans*p     return ans power=calc(3) print(power,'9') power=calc(3,2) print(power,'27')</pre>	2
<b>SECTION C</b>		
26	<p>Predict the output of the Python code given below:</p> <pre>def calculate(str):     text=""     x=range(len(str)-1)     for i in x:         if str[i].isupper():             text+=str[i]         elif str[i].islower():             text+=str[i+1]         else:             text+='@'     return text start='Pre-board Exam' final=calculate(start) print(final)</pre>	3

27	<p>Consider the following table <b>DOCTOR</b> given below and write the output of the SQL Queries that follows :</p> <table border="1" data-bbox="370 283 1307 640"> <thead> <tr> <th>D_ID</th> <th>D_NAME</th> <th>D_DEPT</th> <th>GENDER</th> <th>EXPERIENCE</th> </tr> </thead> <tbody> <tr> <td>101</td> <td>JOSEPH</td> <td>ENT</td> <td>MALE</td> <td>10</td> </tr> <tr> <td>104</td> <td>GUPTA</td> <td>MEDICINE</td> <td>MALE</td> <td>12</td> </tr> <tr> <td>106</td> <td>SUMAN</td> <td>ORTHO</td> <td>FEMALE</td> <td>7</td> </tr> <tr> <td>111</td> <td>HANEEF</td> <td>ENT</td> <td>MALE</td> <td>12</td> </tr> <tr> <td>123</td> <td>DEEPTI</td> <td>CARDIOLOGY</td> <td>FEMALE</td> <td>6</td> </tr> <tr> <td>132</td> <td>VEENA</td> <td>SKIN</td> <td>FEMALE</td> <td>12</td> </tr> </tbody> </table> <p>i) SELECT D_NAME FROM DOCTOR WHERE GENDER=MALE AND EXPERIENCE=12 ;  ii) SELECT DISTINCT(D_DEPT) FROM DOCTOR ;  iii) SELECT D_NAME , EXPERIENCE FROM DOCTOR ORDER BY EXPERIENCE ;</p>	D_ID	D_NAME	D_DEPT	GENDER	EXPERIENCE	101	JOSEPH	ENT	MALE	10	104	GUPTA	MEDICINE	MALE	12	106	SUMAN	ORTHO	FEMALE	7	111	HANEEF	ENT	MALE	12	123	DEEPTI	CARDIOLOGY	FEMALE	6	132	VEENA	SKIN	FEMALE	12	3																																																	
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28	<p>Write a function in Python to count the number of lines in a text file 'EXAM.txt' which start with an alphabet 'T' .  OR  Write a function in Python that count the number of "can" words present in a text file "DETAILS.txt" .</p>	3																																																																																				
29	<p>Consider the following Table "<b>TEACHER</b>"</p> <table border="1" data-bbox="337 1092 1307 1680"> <thead> <tr> <th>T_ID</th> <th>NAME</th> <th>AGE</th> <th>SEX</th> <th>DEPT</th> <th>D_O_JOIN</th> <th>SALARY</th> </tr> </thead> <tbody> <tr> <td>902</td> <td>SANDEEP</td> <td>45</td> <td>M</td> <td>COMPUTER</td> <td>10/10/2002</td> <td>56000</td> </tr> <tr> <td>813</td> <td>SANGEETA</td> <td>34</td> <td>F</td> <td>HISTORY</td> <td>24/9/2010</td> <td>50000</td> </tr> <tr> <td>771</td> <td>JOEL</td> <td>48</td> <td>M</td> <td>ENGLISH</td> <td>4/5/2001</td> <td>67900</td> </tr> <tr> <td>703</td> <td>MANVITH</td> <td>36</td> <td>M</td> <td>MATHS</td> <td>27/09/2012</td> <td>48000</td> </tr> <tr> <td>606</td> <td>NEENA</td> <td>32</td> <td>F</td> <td>ENGLISH</td> <td>23/5/2013</td> <td>40000</td> </tr> <tr> <td>537</td> <td>ABHILASH</td> <td>42</td> <td>M</td> <td>MATHS</td> <td>6/2/2006</td> <td>47000</td> </tr> <tr> <td>420</td> <td>MUHSIN</td> <td>49</td> <td>M</td> <td>ENGLISH</td> <td>8/3/2003</td> <td>70450</td> </tr> <tr> <td>412</td> <td>SUBESH</td> <td>52</td> <td>M</td> <td>HINDI</td> <td>10/11/1999</td> <td>60500</td> </tr> <tr> <td>345</td> <td>RENJINI</td> <td>36</td> <td>F</td> <td>COMPUTER</td> <td>27/4/2010</td> <td>45000</td> </tr> <tr> <td>218</td> <td>DEEPTI</td> <td>28</td> <td>F</td> <td>HINDI</td> <td>2/2/2016</td> <td>40000</td> </tr> <tr> <td>160</td> <td>SHUBHAM</td> <td>39</td> <td>M</td> <td>SCIENCE</td> <td>19/9/2011</td> <td>45000</td> </tr> </tbody> </table> <p>Based on the above table, Write SQL command for the following :</p> <p>i) To show all information about the teacher of maths department  ii) To list name and department whose name starts with letter 'M'  iii) To display all details of female teacher whose salary in between 35000 and 50000</p>	T_ID	NAME	AGE	SEX	DEPT	D_O_JOIN	SALARY	902	SANDEEP	45	M	COMPUTER	10/10/2002	56000	813	SANGEETA	34	F	HISTORY	24/9/2010	50000	771	JOEL	48	M	ENGLISH	4/5/2001	67900	703	MANVITH	36	M	MATHS	27/09/2012	48000	606	NEENA	32	F	ENGLISH	23/5/2013	40000	537	ABHILASH	42	M	MATHS	6/2/2006	47000	420	MUHSIN	49	M	ENGLISH	8/3/2003	70450	412	SUBESH	52	M	HINDI	10/11/1999	60500	345	RENJINI	36	F	COMPUTER	27/4/2010	45000	218	DEEPTI	28	F	HINDI	2/2/2016	40000	160	SHUBHAM	39	M	SCIENCE	19/9/2011	45000	3
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30	<p>Thushar received a message(string) that has upper case and lower-case alphabet. He want to extract all the upper case letters separately .Help him to do his task by performing the following user defined function in Python:</p> <p>a) Push the upper case alphabets in the string into a STACK                  b) Pop and display the content of the stack.</p> <p>For example:                  If the message is “All the Best for your Pre-board Examination”                  The output should be : E P B A</p>	3
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**SECTION D**

31	<p>Consider the table PRODUCT and CLIENT given below:</p> <p style="text-align: center;"><b>PRODUCT</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>PR_ID</th> <th>PR_NAME</th> <th>MANUFACTURER</th> <th>PRICE</th> <th>QTY</th> </tr> </thead> <tbody> <tr> <td>BS101</td> <td>BATH SOAP</td> <td>PEARSE</td> <td>45.00</td> <td>25</td> </tr> <tr> <td>SP210</td> <td>SHAMPOO</td> <td>SUN SILK</td> <td>320.00</td> <td>10</td> </tr> <tr> <td>SP235</td> <td>SHAMPOO</td> <td>DOVE</td> <td>455.00</td> <td>15</td> </tr> <tr> <td>BS120</td> <td>BATH SOAP</td> <td>SANTOOR</td> <td>36.00</td> <td>10</td> </tr> <tr> <td>TB310</td> <td>TOOTH BRUSH</td> <td>COLGATE</td> <td>48.00</td> <td>15</td> </tr> <tr> <td>FW422</td> <td>FACE WASH</td> <td>DETOL</td> <td>66.00</td> <td>10</td> </tr> <tr> <td>BS145</td> <td>BATH SOAP</td> <td>DOVE</td> <td>38.00</td> <td>20</td> </tr> </tbody> </table> <p style="text-align: center;"><b>CLIENT</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>C_ID</th> <th>C_NAME</th> <th>CITY</th> <th>PR_ID</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>DREAM MART</td> <td>COCHIN</td> <td>BS101</td> </tr> <tr> <td>02</td> <td>SHOPRIX</td> <td>DELHI</td> <td>TB310</td> </tr> <tr> <td>03</td> <td>BIG BAZAR</td> <td>DELHI</td> <td>SP235</td> </tr> <tr> <td>04</td> <td>LIVE LIFE</td> <td>CHENNAI</td> <td>FW422</td> </tr> </tbody> </table> <p>Write SQL Queries for the following:</p> <p>i) Display the details of those clients whose city is DELHI                  ii) Increase the Price of all Bath soap by 10                  iii) Display the details of Products having the highest price                  iv) Display the product name, price, client name and city with their corresponding matching product Id.</p>	PR_ID	PR_NAME	MANUFACTURER	PRICE	QTY	BS101	BATH SOAP	PEARSE	45.00	25	SP210	SHAMPOO	SUN SILK	320.00	10	SP235	SHAMPOO	DOVE	455.00	15	BS120	BATH SOAP	SANTOOR	36.00	10	TB310	TOOTH BRUSH	COLGATE	48.00	15	FW422	FACE WASH	DETOL	66.00	10	BS145	BATH SOAP	DOVE	38.00	20	C_ID	C_NAME	CITY	PR_ID	01	DREAM MART	COCHIN	BS101	02	SHOPRIX	DELHI	TB310	03	BIG BAZAR	DELHI	SP235	04	LIVE LIFE	CHENNAI	FW422	4
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32	<p>Gupta is writing a program to create a csv file “employee.csv” which will contain user name and password for department entries. He has written the following code . As a programmer, help him to successfully execute the given task.</p> <pre>import ----- #statement 1 def add_emp(username,password):     f=open('employee.csv', '-----') # statement 2     content=csv.writer(f)     content.writerow([username,password])     f.close() def read_emp():     with open ('employee.csv','r') as file:</pre>	4
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	<pre> content_reader=csv.------(file)           # statement 3 for row in content_reader:     print(row[0],row[1]) file.close() add_emp('mohan','emp123#') add_emp('ravi','emp456#') read_emp()                                     #statement 4                 </pre>	
	<p>i) Name the module he should import in statement 1</p> <p>ii) In which mode , Gupta should open the file to add record in to the file ? (statement 2)</p> <p>iii) Fill in the blank in statement 3 to read the record from a csv file</p> <p>iv) What output will he obtain while executing statement 4 ?</p>	

**SECTION E**

33	<p>Oxford college, in Delhi is starting up the network between its different wings. There are four Buildings named as SENIOR, JUNIOR, ADMIN and HOSTEL as shown below:</p> <div style="display: flex; justify-content: space-around; text-align: center;"> <div style="border: 1px solid black; padding: 5px;">JUNIOR</div> <div style="border: 1px solid black; padding: 5px;">SENIOR</div> <div style="border: 1px solid black; padding: 5px;">ADMIN</div> <div style="border: 1px solid black; padding: 5px;">HOSTEL</div> </div> <p>The distance between various building is as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>ADMIN TO SENIOR</td><td>200 m</td></tr> <tr><td>ADMIN TO JUNIOR</td><td>150 m</td></tr> <tr><td>ADMIN TO HOSTEL</td><td>50 m</td></tr> <tr><td>SENIOR TO JUNIOR</td><td>250 m</td></tr> <tr><td>SENIOR TO HOSTEL</td><td>350 m</td></tr> <tr><td>JUNIOR TO HOSTEL</td><td>350 m</td></tr> </table> <p>Number of computer in each building is :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>SENIOR</td><td>130</td></tr> <tr><td>JUNIOR</td><td>80</td></tr> <tr><td>ADMIN</td><td>160</td></tr> <tr><td>HOSTEL</td><td>50</td></tr> </table>	ADMIN TO SENIOR	200 m	ADMIN TO JUNIOR	150 m	ADMIN TO HOSTEL	50 m	SENIOR TO JUNIOR	250 m	SENIOR TO HOSTEL	350 m	JUNIOR TO HOSTEL	350 m	SENIOR	130	JUNIOR	80	ADMIN	160	HOSTEL	50	5
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	<p>i) Suggest the cable layout of connections between the buildings.</p> <p>ii) Suggest the most suitable place (i.e., building) to house the server of this college, provide a suitable reason.</p> <p>iii) Is there a requirement of a repeater in the given cable layout? Why/ Why not?</p> <p>iv) Suggest the placement of hub/switch with justification.</p> <p>v) The organisation also has inquiry office in another city about 50-60 km away in hilly region. Suggest the suitable transmission media to interconnect to college and inquiry office out of the following:</p> <ol style="list-style-type: none"> <li>a. Fiber optic cable</li> <li>b. Microwave</li> <li>c. Radiowave</li> </ol>																					

34	<p>i) What is Pickling or Serialization?  ii) A binary file “salary.DAT” has structure [employee id, employee name, salary]. Write a function countrec() in Python that would read contents of the file “salary.DAT” and display the details of those employee whose salary is above 20000.</p> <p style="text-align: center;"><b>OR</b></p> <p>i) What is the difference between ‘r’ and ‘rb’ mode in Python file ?  ii) A binary file “STUDENT.DAT” has structure [admission_number, Name, Percentage]. Write a function countrec() in Python that would read contents of the file “STUDENT.DAT” and display the details of those students whose percentage is above 90. Also display number of students scoring above 90%</p>	2+3=5
35	<p>i) What do you mean by a Primary key in RDBMS ?  ii) Complete the following database connectivity program by writing the missing statements and performing the given query</p> <pre>import ----- as mysql # statement 1 con=mysql. -----(host='localhost',user='root',passwd='123' ,                     database='student') # statement 2 cursor=con.cursor( ) cursor.execute(-----) # statement 3 data=cursor. ----- # statement 4 for rec in data:     print(rec) con.close( )</pre> <p>a) Complete the statement 1 by writing the name of package need to be imported for database connectivity .  b) Complete the statement 2 by writing the name of method require to create connection between Python and mysql.  c) Complete the statement 3 by writing the query to display those students record whose mark is between 50 and 90 from table “student”  d) Complete the statement 4 to retrieve all records from the result set.</p> <p style="text-align: center;"><b>OR</b></p> <p>i) What is the difference between UNIQUE and PRIMARY KEY constraints ?  ii) Maya has created a table named BOOK in MYSQL database,  LIBRARY  BNO(Book number )- integer  B_name(Name of the book) - string  Price (Price of one book) –integer</p> <p>Note the following to establish connectivity between Python and MySQL: Username – root, Password – writer,Host – localhost.</p> <p>Maya, now wants to display the records of books whose price is more than 250. Help Maya to write the program in Python</p>	1+4=5

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