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**Sample Question Paper**

Maximum Marks: 35

**COMPUTER SCIENCE (Code: 083)**

Time: 2 hours

**General Instructions**

- The question paper is divided into 3 sections – A, B and C
- Section A, consists of 7 questions (1-7). Each question carries 2 marks.
- Section B, consists of 3 questions (8-10). Each question carries 3 marks.
- Section C, consists of 3 questions (11-13). Each question carries 4 marks.
- Internal choices have been given for question numbers 7, 8 and 12.

<b>Section -A</b>			
<b>Each question carries 2 marks</b>			
<b>Q. No</b>	<b>Part No.</b>	<b>Question</b>	<b>Marks</b>
1.		Give any two characteristics of stacks.	(2)
2.	(i)	Expand the following: <b>SMTP , XML</b>	(1)
	(ii)	Out of the following, which is the fastest wired and wireless medium of transmission?  <b>Infrared, coaxial cable, optical fibre, microwave, Ethernet cable</b>	(1)
3.		Differentiate between char(n) and varchar(n) data types with respect to databases.	(2)
4.		A resultset is extracted from the database using the cursor object (that has been already created) by giving the following statement.  <b>Mydata=cursor.fetchone ()</b>  (a) How many records will be returned by fetchone() method?  (b) What will be the datatype of Mydata object after the given command is executed?	(2)

5.		<p>Write the output of the queries (a) to (d) based on the table, Furniture given below:</p> <p><b>Table: FURNITURE</b></p> <table border="1" data-bbox="366 298 1198 850"> <thead> <tr> <th>FID</th> <th>NAME</th> <th>DATEOFPURCHASE</th> <th>COST</th> <th>DISCOUNT</th> </tr> </thead> <tbody> <tr> <td>B001</td> <td>Double Bed</td> <td>03-Jan-2018</td> <td>45000</td> <td>10</td> </tr> <tr> <td>T010</td> <td>Dining Table</td> <td>10-Mar-2020</td> <td>51000</td> <td>5</td> </tr> <tr> <td>B004</td> <td>Single Bed</td> <td>19-Jul-2021</td> <td>22000</td> <td>0</td> </tr> <tr> <td>C003</td> <td>Long Back Chair</td> <td>30-Dec-2016</td> <td>12000</td> <td>3</td> </tr> <tr> <td>T006</td> <td>Console Table</td> <td>17-Nov-2019</td> <td>15000</td> <td>12</td> </tr> <tr> <td>B006</td> <td>Bunk Bed</td> <td>01-Jan-2021</td> <td>28000</td> <td>14</td> </tr> </tbody> </table> <p>(a) <code>SELECT SUM(DISCOUNT) FROM FURNITURE WHERE COST&gt;15000;</code></p> <p>(b) <code>SELECT MAX (DATEOFPURCHASE) FROM FURNITURE;</code></p> <p>(c) <code>SELECT * FROM FURNITURE WHERE DISCOUNT&gt;5 AND FID LIKE "T%";</code></p> <p>(d) <code>SELECT DATEOFPURCHASE FROM FURNITURE WHERE NAME IN ("Dining Table", "Console Table");</code></p>	FID	NAME	DATEOFPURCHASE	COST	DISCOUNT	B001	Double Bed	03-Jan-2018	45000	10	T010	Dining Table	10-Mar-2020	51000	5	B004	Single Bed	19-Jul-2021	22000	0	C003	Long Back Chair	30-Dec-2016	12000	3	T006	Console Table	17-Nov-2019	15000	12	B006	Bunk Bed	01-Jan-2021	28000	14	(2)
FID	NAME	DATEOFPURCHASE	COST	DISCOUNT																																		
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6.	(i)	Which command is used to view the list of tables in a database?	(1)																																			
	(ii)	Give one point of difference between an equi-join and a natural join.	(1)																																			
7.		<p>Consider the table, <b>MOVIEDETAILS</b> given below:</p> <p><b>Table: MOVIEDETAILS</b></p> <table border="1" data-bbox="366 1709 1250 1818"> <thead> <tr> <th>MOVIEID</th> <th>TITLE</th> <th>LANGUAGE</th> <th>RATING</th> <th>PLATFORM</th> </tr> </thead> <tbody> <tr> <td>M001</td> <td>Minari</td> <td>Korean</td> <td>5</td> <td>Netflix</td> </tr> <tr> <td>M004</td> <td>MGR Magan</td> <td>Tamil</td> <td>4</td> <td>Hotstar</td> </tr> </tbody> </table>	MOVIEID	TITLE	LANGUAGE	RATING	PLATFORM	M001	Minari	Korean	5	Netflix	M004	MGR Magan	Tamil	4	Hotstar	(2)																				
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M010	Kaagaz	Hindi	3	Zee5
M011	Harry Potter and the Chamber of Secrets	English	4	Prime Video
M015	Uri	Hindi	5	Zee5
M020	Avengers: Endgame	English	4	Hotstar

- (a) Identify the degree and cardinality of the table.  
(b) Which field should be made the primary key? Justify your answer.

**OR**

- (a) Identify the candidate key(s) from the table **MOVIEDETAILS**.  
(b) Consider the table **SCHEDULE** given below:

Table: SCHEDULE

SLOTID	MOVIEID	TIMESLOT
S001	M010	10 AM to 12 PM
S002	M020	2 PM to 5 PM
S003	M010	6 PM to 8 PM
S004	M011	9 PM to 11 PM

Which field will be considered as the foreign key if the tables **MOVIEDETAILS** and **SCHEDULE** are related in a database?

**SECTION – B**

**Each question carries 3 marks**

8. Julie has created a dictionary containing names and marks as key value pairs of 6 students. Write a program, with separate user defined functions to perform the following operations:
- Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) is greater than 75.
  - Pop and display the content of the stack.
- For example:  
If the sample content of the dictionary is as follows:

		<p>R={"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90, "TOM":82}</p> <p>The output from the program should be: TOM ANU BOB OM</p> <p style="text-align: center;"><b>OR</b></p> <p>Alam has a list containing 10 integers. You need to help him create a program with separate user defined functions to perform the following operations based on this list.</p> <ul style="list-style-type: none"> <li>• Traverse the content of the list and push the even numbers into a stack.</li> <li>• Pop and display the content of the stack.</li> </ul> <p>For Example: If the sample Content of the list is as follows: N=[12, 13, 34, 56, 21, 79, 98, 22, 35, 38]</p> <p>Sample Output of the code should be: 38 22 98 56 34 12</p>													
9.	(i)	<p>A table, <b>ITEM</b> has been created in a database with the following fields: <b>ITEMCODE, ITEMNAME, QTY, PRICE</b></p> <p>Give the SQL command to add a new field, <b>DISCOUNT</b> (of type Integer) to the <b>ITEM</b> table.</p>	(1)												
	(ii)	<p>Categorize following commands into DDL and DML commands?</p> <p><b>INSERT INTO, DROP TABLE, ALTER TABLE, UPDATE...SET</b></p>	(2)												
10.		<p>Charu has to create a database named <b>MYEARTH</b> in MYSQL. She now needs to create a table named <b>CITY</b> in the database to store the records of various cities across the globe. The table <b>CITY</b> has the following structure:</p> <p>Table: CITY</p> <table border="1"> <thead> <tr> <th>FIELD NAME</th> <th>DATA TYPE</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr> <td>CITYCODE</td> <td>CHAR(5)</td> <td>Primary Key</td> </tr> <tr> <td>CITYNAME</td> <td>CHAR(30)</td> <td></td> </tr> <tr> <td>SIZE</td> <td>INTEGER</td> <td></td> </tr> </tbody> </table>	FIELD NAME	DATA TYPE	REMARKS	CITYCODE	CHAR(5)	Primary Key	CITYNAME	CHAR(30)		SIZE	INTEGER		(3)
FIELD NAME	DATA TYPE	REMARKS													
CITYCODE	CHAR(5)	Primary Key													
CITYNAME	CHAR(30)														
SIZE	INTEGER														

AVGTEMP	INTEGER	
POLLUTIONRATE	INTEGER	
POPULATION	INTEGER	

Help her to complete the task by suggesting appropriate SQL commands.

**Section C**  
**Each question carries 4 marks**

11.

Write queries (a) to (d) based on the tables **EMPLOYEE** and **DEPARTMENT** given below:

(4)

**Table: EMPLOYEE**

EMPID	NAME	DOB	DEPTID	DESIG	SALARY
120	Alisha	23- Jan- 1978	D001	Manager	75000
123	Nitin	10- Oct- 1977	D002	AO	59000
129	Navjot	12- Jul- 1971	D003	Supervisor	40000
130	Jimmy	30- Dec- 1980	D004	Sales Rep	
131	Faiz	06- Apr- 1984	D001	Dep Manager	65000

**Table: DEPARTMENT**

DEPTID	DEPTNAME	FLOORNO
D001	Personal	4
D002	Admin	10
D003	Production	1
D004	Sales	3

(a) To display the average salary of all employees, department wise.

(b) To display name and respective department name of each employee whose salary is more than 50000.

		<p>(c) To display the names of employees whose salary is not known, in alphabetical order.</p> <p>(d) To display DEPTID from the table <b>EMPLOYEE</b> without repetition.</p>													
12.	(i)	<p>Give two advantages and two disadvantages of star topology</p> <p style="text-align: center;"><b>OR</b></p> <p>Define the following terms: <b>www, web hosting</b></p>	(2)												
	(ii)	How is packet switching different from circuit switching?	(2)												
13.		<p>BeHappy Corporation has set up its new centre at Noida, Uttar Pradesh for its office and web-based activities. It has 4 blocks of buildings.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;"><b>BeHappy Corporation</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">Block A</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">Block B</div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">Block C</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">Block D</div> </div> </div> <p>Distance between the various blocks is as follows:</p> <table style="margin-left: 40px;"> <tr><td>A to B</td><td>40 m</td></tr> <tr><td>B to C</td><td>120m</td></tr> <tr><td>C to D</td><td>100m</td></tr> <tr><td>A to D</td><td>170m</td></tr> <tr><td>B to D</td><td>150m</td></tr> <tr><td>A to C</td><td>70m</td></tr> </table> <p>Numbers of computers in each block Block A - 25</p>	A to B	40 m	B to C	120m	C to D	100m	A to D	170m	B to D	150m	A to C	70m	(4)
A to B	40 m														
B to C	120m														
C to D	100m														
A to D	170m														
B to D	150m														
A to C	70m														

	<p>Block B - 50 Block C - 125 Block D - 10</p> <p>(a) Suggest and draw the cable layout to efficiently connect various blocks of buildings within the Noida centre for connecting the digital devices.</p> <p>(b) Suggest the placement of the following device with justification</p> <ol style="list-style-type: none"><li>i. Repeater</li><li>ii. Hub/Switch</li></ol> <p>(c) Which kind of network (PAN/LAN/WAN) will be formed if the Noida office is connected to its head office in Mumbai?</p> <p>(d) Which fast and very effective wireless transmission medium should preferably be used to connect the head office at Mumbai with the centre at Noida?</p>	
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