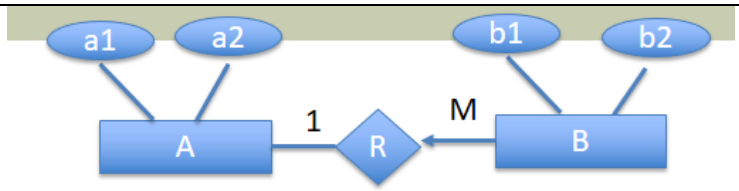
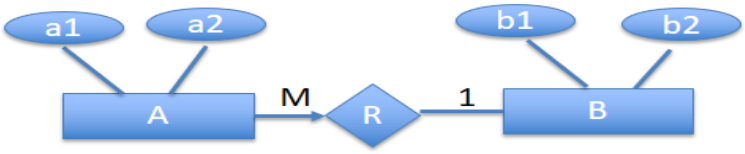
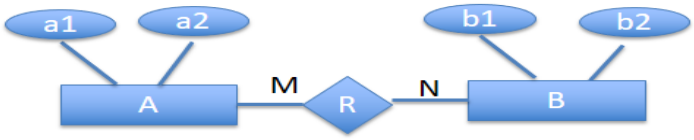
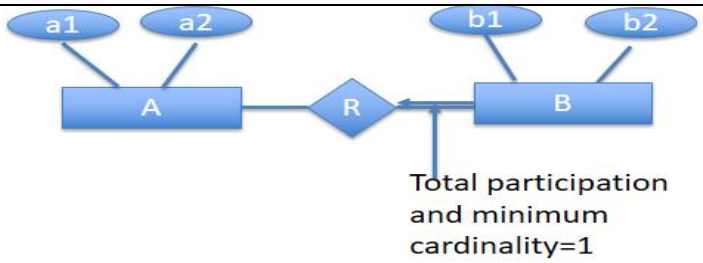
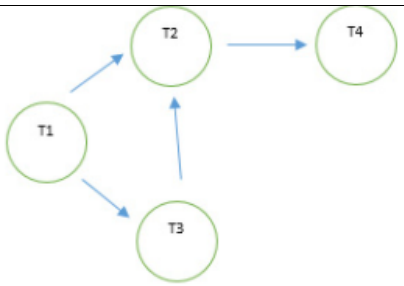
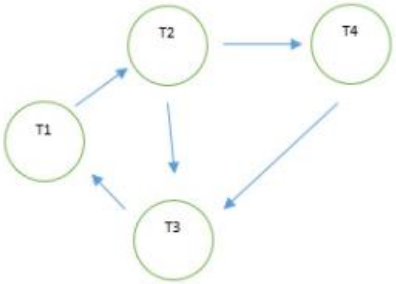
Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2020

Course: Advanced Database Management Systems **Semester: III**
Program: B.Tech. Computer Science+ CL/IPR **Time : 03 hrs.**
Course Code: CSEG 2005 **Max. Marks: 100**
Instructions:

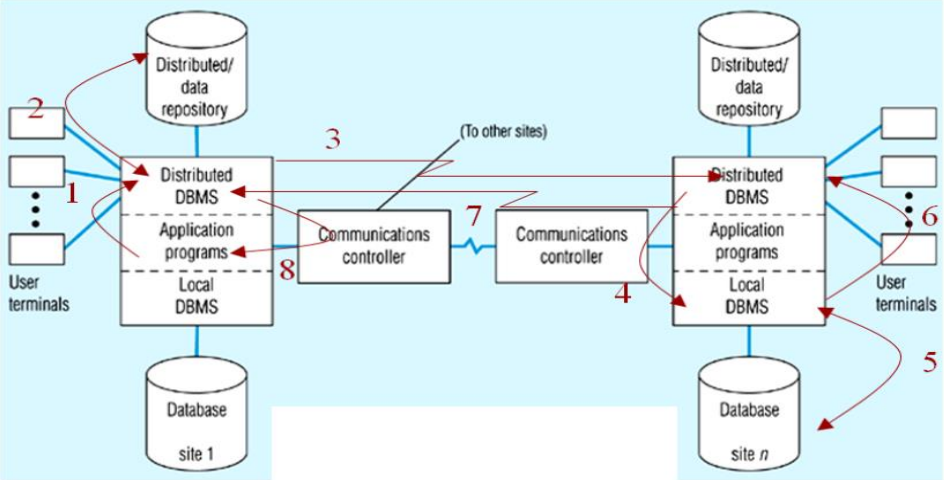
SECTION A

S. No.	‘A’ and ‘B’ are entities with relationship ‘R’. ‘a1’ and ‘b1’ are the primary keys for entity A and B respectively. Write the relations created for the following relationship sets (Q1-Q4)	**Marks**	
Q 1		**5**	**CO1**
Q2		**5**	**CO1**
Q3		**5**	**CO1**
Q4		**5**	**CO1**
	Considering the wait for graph in Q-5 and Q-6 detect whether the system will be in state of deadlock or not. Give reason.		

<table>
<tr><td>Q5</td><td> 
</td><td>5</td><td>CO4</td></tr>
<tr><td>Q6</td><td> 
</td><td>5</td><td>CO4</td></tr>
<tr><td colspan="4">SECTION B</td></tr>
<tr><td>Q 7</td><td>Explain the advantages and disadvantages of using a static hash file with buckets and chaining.</td><td>10</td><td>CO2</td></tr>
<tr><td>Q 8</td><td>Describe the atomicity, durability, isolation, and consistency preservation properties of a database transaction.</td><td>10</td><td>CO3</td></tr>
<tr><td>Q 9</td><td>Give an account of problems that occur when concurrent execution is uncontrolled.</td><td>10</td><td>CO4</td></tr>
<tr><td>Q 10</td><td>EMPLOYEES Table:

<table>
<tr><th>Column Name</th><th>Data Type</th><th>Width</th><th>Attributes</th></tr>
<tr><td>Employee_id</td><td>Character</td><td>10</td><td>PK</td></tr>
<tr><td>First_Name</td><td>Character</td><td>30</td><td>NN</td></tr>
<tr><td>Last_Name</td><td>Character</td><td>30</td><td>NN</td></tr>
<tr><td>DOB</td><td>Date</td><td></td><td></td></tr>
<tr><td>Salary</td><td>Number</td><td>25</td><td>NN</td></tr>
<tr><td>Department_id</td><td>Character</td><td>10</td><td></td></tr>
</table>

Write the SQL queries considering the employees table:
a. Create an index of name employee_idx on EMPLOYEES with column Last_Name, Department_id .
b. Find the ROWID for the above table and create a unique index on employee_id column of the EMPLOYEES.</td><td>10</td><td>CO2</td></tr>
<tr><td></td><td>OR</td><td></td><td></td></tr>
</table>

Q10	Write the SQL queries considering the employees relation above: a. Create a unique and composite index on employee_id and check whether there is duplicity of tuples or not. b. Create Function-based indexes defined on the SQL functions UPPER(column_name) or LOWER(column_name) to facilitate case-insensitive searches(on column Last_Name)		
Q11	Consider the transactions T1, T2, and T3 and the schedules S1 and S2 given below. T1: r1(X); r1(Z); w1(X); w1(Z) T2: r2(Y); r2(Z); w2(Z) T3: r3(Y); r3(X); w3(Y) S1: r1(X); r3(Y); r3(X); r2(Y); r2(Z); w3(Y); w2(Z); r1(Z); w1(X); w1(Z) S2: r1(X); r3(Y); r2(Y); r3(X); r1(Z); r2(Z); w3(Y); w1(X); w2(Z); w1(Z) Make a precedence graph for S1 and S2 and check whether the schedules are conflict serializable.	**10**	**CO3**
SECTION-C			
Q12	With reference to distributed database, discuss the steps 1-7.  	**20**	**CO5**
	OR		
Q12	Explain the significance of fragmentation in relation of Distributed database. Also, specify its types.		