University of Mumbai

Program: Computer Engineering Curriculum

Scheme: Rev2019

Examination: Third Year Semester: V

Course Code: CSDLO5013 Course Name: Advance Database

Time: 2 hours 30 mins Max. Marks: 80

Q1. All questions compulsory 2 marks each (20 Marks)

Q1.	_____ is primarily designed to fulfill the criteria of being non-blocking in nature compared to its counterpart 2PC
Option A:	The two-phase commit protocol
Option B:	The three-phase commit protocol
Option C:	Strict 2 PL
Option D:	Linear 2 PL
Q2.	When transaction Ti requests a data item currently held by Tj, Ti is allowed to wait only if it has a timestamp smaller than that of Tj (that is, Ti is older than Tj). Otherwise, Ti is rolled back (dies). This is
Option A:	Wound-wait
Option B:	Wait-wound
Option C:	Wait-die
Option D:	Wound-die
Q3.	____ query optimization takes place at execution time.
Option A:	Manual
Option B:	Static
Option C:	Automatic
Option D:	Dynamic
Q4.	Well formed XML document means
Option A:	It contain an element
Option B:	must contain one or more elements and root element
Option C:	It contain an element
Option D:	It contain one or more elements
Q5.	**Identify Incorrect statement w.r.t. Sharding**
Option A:	Key is selected based upon the distribution required to happen
Option B:	The shard key cannot have multiple fields
Option C:	Cardinality of the shard key should be less
Option D:	In mongodb, Router in sharding is termed as mongos

University of Mumbai
Program: Computer Engineering Curriculum
Scheme: Rev2019
Examination: Third Year Semester: V
Course Code: CSDLO5013 Course Name: Advance Database
Time: 2 hours 30 mins Max. Marks: 80

Q6.	**consistency in CAP theorem indicates**
Option A:	All replicas contain the same version of data and Client always has the same view of the data (no matter what node
Option B:	All replicas contain the same version of data
Option C:	Client always has the same view of the data (no matter what node
Option D:	All replicas may not contain the same version of data but Client always has the same view of the data (no matter what node
Q7.	Data Replication ---
Option A:	increases Consistency
Option B:	decreases redundancy
Option C:	increases data availability
Option D:	Decreases concurrency
Q8.	**What is the output of following two commands in mongoDB db.posts.insert({"_id":1}) and db.posts.insert({"_id":1})**
Option A:	It will insert two documents and throw a warning to the user
Option B:	Two documents will be inserted
Option C:	It will throw a duplicate key error
Option D:	MongoDB will automatically increment the _id of the second Document
Q9.	**Which query displays all citizens with an age greater than or equal to 21**
Option A:	db.citizens.find({age:$gte:21})
Option B:	db.citizens.find({age>=21})
Option C:	db.citizens.find{{age:$gte:21}}
Option D:	db.citizens.find({age:{$gte:21}})

University of Mumbai

Program: Computer Engineering Curriculum

Scheme: Rev2019

Examination: Third Year Semester: V

Course Code: CSDLO5013 Course Name: Advance Database

Time: 2 hours 30 mins Max. Marks: 80

Q10.	**observe following temporal database table "employee"** **Which rows will be selected if we run a command** **SELECT * FROM EMPLOYEES**

Name	Ssn	Salary	Dno	Supervisor_ssn	Vst	Vet
Smith	123456789	25000	5	333445555	2002-06-15	2003-05-31
Smith	123456789	30000	5	333445555	2003-06-01	Now
Wong	333445555	25000	4	999887777	1999-08-20	2001-01-31
Wong	333445555	30000	5	999887777	2001-02-01	2002-03-31
Wong	333445555	40000	5	888665555	2002-04-01	Now
Brown	222447777	28000	4	999887777	2001-05-01	2002-08-10
Narayan	666884444	38000	5	333445555	2003-08-01	Now

Option A:	Row nos. 1,3,4,6
Option B:	All rows
Option C:	Row nos. 2,5,7
Option D:	Row nos. 1,3, 6,7

Q2. (20 Marks Each)	**Solve any Four Questions out of Six** **5 marks each**
A	Explain primary and derived horizontal fragmentation along with examples.
B	Explain Layers of Query Processing with a neat, labelled diagram.
C	Explain How deadlock management is done in Distributed Environment.
D	University database contains information about the course and the professors who teach the course in each semester. Each course must also have information about the number of students enrolled, room no., date, and time (when and where lecture will be conducted). A) Write a DTD rules for above XML Documents. B) Create XML Schema for XML Documents.
E	Describe CAP theorem. Discuss how suitable it is to classify NoSQL databases.
F	Explain different types of Spatial queries. Give meaningful examples of each.

University of Mumbai

Program: Computer Engineering Curriculum

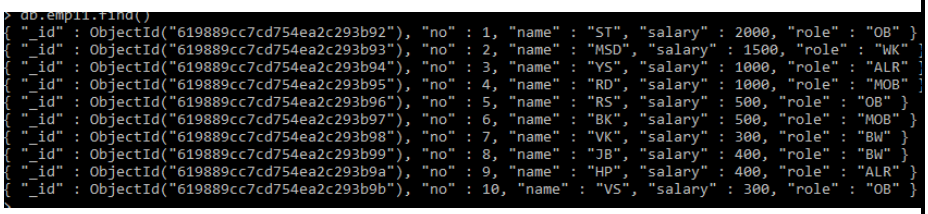
Scheme: Rev2019

Examination: Third Year Semester: V

Course Code: CSDLO5013 Course Name: Advance Database

Time: 2 hours 30 mins Max. Marks: 80

Q3. (20 Marks Each)	**Solve any Two Questions out of Three** **10 marks each**
A	How 3PC overcomes the blocking disadvantage of 2PC. Also explain the 3PC with a neat labelled diagram.
B	Explain in detail the Sharding technique used in MongoDB. State clearly the use and working of Config server, shard and Router
C	How the partition Tolerance is achieved in NoSQL databases.

Q4. (20 Marks Each)	**Solve any Two Questions out of Three** **10 marks each**
A	Create a collection called 'games'. Add 5 games to the database. Give each document the following properties: name, genre, rating (out of 100). 1. Write a query to find one of your games by name without using limit (). 2. Write a query that returns the 3 highest rated games in descending order. 3. Update any two games to have two achievements called 'Game Master' and 'Speed Demon', each under a single key(only one game should have both the achievements). 4. Write a query that returns all the games that have both the 'Game Maser' and the 'Speed Demon' as achievements. 5. Write a query that returns only games that have achievements. Not all of your games should have achievements
B	 Database name: emp Collection name: emp11 From the given database 1. Update Salary Of Employee where Name is "ST" by +8000 2. Display total "no" grouped by salary 3. Project only name and salary of all the documents. Suppress the id field 4. Update role of Employee where Name is "MSD" as OB and MOB(use array) Unwind the array fields of all documents(if present)

University of Mumbai

Program: Computer Engineering Curriculum

Scheme: Rev2019

Examination: Third Year Semester: V

Course Code: CSDLO5013 Course Name: Advance Database

Time: 2 hours 30 mins Max. Marks: 80

C

Id	Name	Aadhar	Salary	Dept. id	Supervisor ID	VST	VST
1	SACHIN	23456789	70000	1	2	01 June 2000	NOW
2	SAURAV	12456468	80000	1		15 July 2005	NOW
3	ZULAN	34256710	75000	2		03 August 2016	NOW
4	MITALI	67564509	65000	2	3	05 February 2017	NOW
5	SHARDUL	98705643	55000	1	2	01 September 2016	NOW

Observe the above temporal data table. If Salary of Zoolan is changed from 75000 to 80000 and is effective from 1st January 2020.

Explain in detail, What steps Temporal system will take to care of this update query ?

You may show modifications in existing row, new rows, if require to be added etc.

UPDATE employee SET salary = 80000 where id=3

Effective date is 1st January 2020.