

**Question 1: Multiple Choice****(10 marks)**

1. You are managing the database systems. You need to ensure that the user AMY can preview and add data of the SALES table. What SQL statement sequence will you use?
  - a) GRANT DELETE ON SALES TO AMY
  - b) GRANT SELECT ON SALES TO ALL
  - c) GRANT SELECT, INSERT ON SALES TO AMY
  - d) GRANT ALL PRIVILEGES ON SALES TO AMY
2. Which of the following statements correctly describe the **locking mechanism**?
  - a) An S-Lock prevents other transactions from reading the locked data.
  - b) An X-Lock prevents other transactions from reading or writing to the locked data.
  - c) Multiple transactions can have S-lock on the same data item.
  - d) Either b & c.
3. Which of the following statements is **TRUE** concerning **triggers**?
  - a) A stored procedure that activates (executes) when data is added, edited, or deleted from a table.
  - b) An object assigned to a column which defines how data can be added.
  - c) A set of transaction SQL statements designed to perform a set task similar to a macro.
  - d) An object assigned to a column which defines a value to be used if nothing is entered.
4. Which of the following best describe the **COMMIT TRANSACTION** command?
  - a) the database should be in a consistent state
  - b) signals successful end of transaction
  - c) all the updates can be made permanent
  - d) All of these
5. The main organisational aim for implementing a data warehouse is to provide?
  - a) Larger scale transaction processing
  - b) Decision support
  - c) Storing large volumes of data
  - d) Cheaper ways of handling transactions
6. All of the following are responsibilities of database administration, **except** \_\_\_\_\_.
  - a. Installing and upgrading DBMS
  - b. DBMS performance monitoring
  - c. Backup and recovery
  - d. Sets data policies, procedures, standards

<p>7. Which of the following functionalities achieves <b>OLAP</b> cube structure?</p> <ul style="list-style-type: none"> <li>a) multidimensional</li> <li>b) shared</li> <li>c) information</li> <li>d) collection</li> </ul>
<p>8. Which of the following statements is <b>TRUE</b> about <b>Fact Table</b>?</p> <ul style="list-style-type: none"> <li>a) Consists of the numeric measurement of interest to the business analysts</li> <li>b) Quantifies data described by the Dimension Tables</li> <li>c) Compound primary key, one segment for each dimension.</li> <li>d) Contains mostly textual elements used to describe the dimensions</li> </ul>
<p>9. Which of the following statements is <b>NOT TRUE</b> about Differential Backup?</p> <ul style="list-style-type: none"> <li>a) Differential backup records all the changes made to a database since the last full backup was performed.</li> <li>b) Differential backup records the entire database.</li> <li>c) The differential backup gets a little bigger each time it's performed.</li> <li>d) A full/differential backup strategy provides a faster backup than full alone. .</li> </ul>
<p>10. If data replication is permitted in a distributed database ____.</p> <ul style="list-style-type: none"> <li>a. copies of tables can be located at the sites that most heavily use them</li> <li>b. one site must contain a copy of every table</li> <li>c. the maximum number of copies that can be made of any one table is equal to half the number of computers (sites) on the network</li> <li>d. distributed joins are never necessary</li> </ul>

**Question 2: Answer Four (4) Questions only**

**(24 marks)**

- a) Appraise the use of **triggers** and **check constraints** in a database application. Use examples to illustrate your answer.
- b) Assess the need for two roles **DBA** and **DA** in database administration. Propose some reasons to justify your answer.
- c) Explain how **data warehouse** systems have several distinct characteristics that differentiate them from **operational (database) systems**.
- d) Explain why concurrency control is important.
- e) What are the advantages and disadvantages of data replication in a distributed database?

**Question 3: Answer Four (4) Questions only****(6 marks)**

The following table contains two transactions, **Trans1** and **Trans2** which run concurrently on **Bal-X**:

Time	Trans-1	Trans-2	Bal-X
T1	Begin Transaction		200
T2	Read(Bal-X)	Begin Transaction	200
T3	Bal-X = Bal-X + 100	Read(Bal-X)	200
T4	Write(Bal-X)	Bal-X = Bal-X + 10	300
T5	Commit	Write(Bal-X)	210
T6		Commit	210

1. **Detect** the problem in the table above by analysing the transactions.
2. **Solve** the problem found by applying the **locking technique**.

**Question 4:****(10 marks)****Rentals**

<b>Rental Id</b>	<b>Start Rental</b>	<b>End Rental</b>	<b>Apartment No</b>	<b>Client ID</b>
1	1-Jul-02	31-Ogos-04	PG4	CR76
2	1-Sep-02	1-Sep-04	PG16	CR76
3	1-Sep-02	10-Jun-04	PG4	CR56
4	10-Okt-02	1-Dis-05	PG36	CR56
5	1-Jan-02	10-Ogos-02	PG16	CR56

**Apartments**

<b>Apartment No</b>	<b>Apartment Address</b>	<b>Rental</b>	<b>Owner ID</b>
PG4	6 Lorong Setia, KL	350	CO40
PG16	5 Desa Nilam, KL	450	CO93
PG36	2, Jalan Matahari, KL	375	CO93

Consider a database containing the tables above and answer the following questions:

- a) Create **InsertApartment** stored procedure to add new **Apartment**, consider all business required.
- b) Create the **InsertRental** trigger to prevent reserving an apartment at the same time.

**I wish you great success**