EXAMINATION PAPER

FACULTY	**:**	**COMPUTER SCIENCE AND MULTIMEDIA**		
COURSE	**:**	**BACHELOR OF INFORMATION TECHNOLOGY (Hons)**		
YEAR/ SEMESTER	**:**	**SECOND YEAR / SEMESTER THREE**		
MODULE TITLE	**:**	**DATABASE MANAGEMENT SYSTEM**		
CODE	**:**	**BIT – 231**		
DATE	**:**	**28 - APRIL, 2019, SUNDAY**		
TIME ALLOWED	**:**	**3 HOURS**		
START	**:**	**1:00 PM**	**FINISH**	**: 4:00 PM**

Instruction to candidates

1. This question paper has THREE (3) Sections.
2. Answer **ALL** questions in Section A, MCQ.
3. Answer **5** questions in Section B, MSAQ.
4. Answer **2** questions in Section C, MEQ.
5. No scripts or answer sheets are to be taken out of the Examination Hall.
6. For Section A, answer in the OMR form provided.

Do not open this question paper until instructed

(Candidates are required to give their answers in their own words as far as practicable)

SECTION A

Multiple Choice Questions **(30*1=30)**

1. **The operation which is NOT considered a basic operation of relational algebra is:**
   a. Join
   b. Selection
   c. Union
   d. Cross product

2. **The database administrator who authorizes all the new users, modifies the database and takes grants privilege is :**
   a. Super user
   b. Administrator
   c. Operator of operating system
   d. All of the above

3. **Which one of the following uniquely identifies the elements in the relation?**
   a. Secondary key
   b. Primary key
   c. Foreign key
   d. Composite key

4. **The keyword to eliminate duplicate rows from the query result in SQL is:**
   a. DISTINCT
   b. UNIQUE
   c. No Duplicate
   d. None of the above

5. **In SQL the work ' natural ' can be used with:**
   a. inner join
   b. full outer join
   c. right outer join
   d. all of the above

6. **In 2NF:**
   a. No functional dependencies (FDs) exist
   b. No multivalued dpenedencies (MVDs) exist
   c. No partial FDs exists
   d. No partial MVDs exists

7. **The union operation is represented by:**
   a. ∩
   b. U
   c. −
   d. *

8. **In SQL the statement select * from R, S is equivalent to:**
   a. select * from R natural join s
   b. select * from R cross join S
   c. select * from R union join S
   d. select * from R inner join S

9. **The normalization is first proposed by:**
   a. Code
   b. Boyce Codd
   c. Boyce
   d. Codd

10. **How can the values in the relation teaches be deleted?**
    a. Drop table teaches
    b. Purge table teaches
    c. Delete from teaches
    d. Delete from teaches where Id =’Null’

11. **Which of the following makes the transaction permanent in the database?iew**
    a. Flashback
    b. View
    c. Rollback
    d. Commit

12. **_____ operator is used for appending two strings.**
    a. &
    b. %
    c. ||
    d. _

13. **What does Rollback do?**
    a. Undoes the transactions before commit
    b. Clears all transactions
    c. Redoes the transactions before commit
    d. No action

14. **In order to maintain the consistency during transactions, database provides:**
    a. Atomic
    b. Commit
    c. Flashback
    d. Retain

15. A transaction completes its execution is said to be:

a. Committed
b. Rolled back
c. Aborted
d. Failed

16. Which of the following statement is true regarding views?

a. The user who creates a view cannot be given update authorization on a view without having update authorization on the relations used to define the view.
b. The user who creates a view cannot be given update authorization on a view without having update authorization on the relations used to define the view.
c. If a user creates a view on which no authorization can be granted, the system will allow the view creation request.
d. A user who creates a view receives all privileges on that view.

17. Which of the following is NOT a consequence of concurrent operations?

a. lost update problem
b. update anomaly
c. unrepeatable read
d. dirty read

18. In authorization graph, if DBA provides authorization to u1 which in turn gives to U2; which of the following is correct?

a. If DBA revokes authorization from u1 then u2 authorization is also revoked
b. If u1 revokes authorization from u2 then u2 authorization is revoked
c. If DBA & u1 revokes authorization from u1 then u2 authorization is also revoked
d. If u2 revokes authorization then u1 authorization is revoked

19. Which of the following can be addressed by enforcing a referential integrity constraint?

a. All phone numbers must include the area code
b. Certain fields are required (such as the email address, or phone number) before the record is accepted
c. Information on the customer must be known before anything can be sold to that customer
d. Then entering an order quantity, the user must input a number and not some text (i.e., 12 rather than ‘a dozen’)

20. The entity relationship set is represent in E-R diagram as:

a. Diamond
b. Double-diamond
c. Dashed line
d. Undivided rectangles

21. An attribute in a relation is a foreign key if the _____ key from one relation is used as an attribute in that relation.

a. Candidate
b. Primary
c. Super
d. Sub

22. Using which language can a user request information from a database?

a. Query
b. Relational
c. Structural
d. Compiler

23. The result which operation contains all pairs of tuples from the two relations, regardless of whether their attribute values match.

a. Join
b. Cartesian product
c. Intersection
d. Set difference

24. The most commonly used operation in relational algebra for projecting a set of tuple from a relation is:

a. Join
b. Projection
c. Select
d. Union

25. _____ is a special type of integrity constraint that relates two relations & maintains consistency across the relations.

a. Domain Constraints
b. Domain Integrity Constraints
c. Entity Integrity Constraints
d. Referential Integrity Constraints

26. A _____ consists of a sequence of query and/or update statements.

a. commit
b. flashback
c. rollback
d. transaction

27. What is data integrity?

a. It is the data contained in database that is non redundant.
b. It is the data contained in database that is accurate and consistent.
c. It is data contained in database that is secured.
d. It is the data contained in database that is shared.

28. In an E-R diagram double lines indicate:

a. Total participation
b. Multiple participation
c. Cardinality
d. None of the above

29. When an E-R diagram is mapped to tables, the representation is redundant for:

a. Weak entity sets
b. Weak relationship sets
c. Strong entity sets
d. Strong relationship sets

30. Tree structures are used to store data in:

a. Network model
b. Relational model
c. Hierarchical model
d. File Based system

SECTION B

Short Answers Questions

Answer any five (5) questions out of eight (8) questions (5*6=30)

1. Make E-R diagram after reading following passage:

Students enroll in college, college hires teachers to teach different course to the students. Students appear in exam. Teachers evaluate exam of each student and publishes obtained marks by each student.

2. Write a SQL query to insert, update and delete.

3. Explain state serializability and recovery management in brief.

4. Define database system. Also, briefly explain its advantages. (2+4)

5. What do you mean by locking, deadlock and timestamp ordering protocol?

6. Define Referential integrity Constraint. What is the reason for implementing referential integrity in database? (2+4)

7. Write a concept of file and record. How can we place the file record on disk? (2+4)

8. Define database user. Explain the three schemes of DBMS in brief. (2+4)

SECTION C
Long Answer Questions
Attempt any two (2) questions out of three (3) questions (2*20=40)

1. Design a database using ER diagram for a mobile shop. This mobile shop maintains information about entities: customer, mobile, bills and login.
Customer has attributes: cid, cname, address, phone, type, the cname is composed of first_name, middle_name and last_name.

- Mobile has attributes: midel, name, brand, IMEINo. A customer may purchase one or more mobile and request only one bill for payment.
- Login has attributes: userid and password.
- Bill has attributes: billno, cname, amount.

State any assumptions made in the design of the E-R diagram.

2.

A. List out the advantages of relational model. Explain various relational constraints with example. (2+6)

B. Define first, second, and third normal forms when only primary keys are considered. How do the general definitions of 2NF and 3NF, which consider all keys of a relation, differ from those that consider only primary keys? (8+4)

3.

A. What is transaction? Explain concurrent transactions with example. (2+8)

B. Consider the below two tables answer the questions asked at the end:

Table 1 – Employee Details

Empid	Full Name	Managerld	Date of Joining
121	Rhea Snow	321	01/31/2014
321	Prince John	986	01/30/2015
421	Betrice Spencer	876	27/11/2016

Table 2 – Employee Salary

Empid	Project	Salary
121	P1	8000
321	P2	1000
421	P1	12000

Questions:

i. Write a SQL query to fetch the count of employees working in project P1. (2)

ii. Write a SQL query to fetch project wise count of employees sorted by projects count in descending order. (2)

iii. Write a SQL query to remove duplicates from a table without using temporary table. (2)

iv. Write a SQL query to fetch employees' names having salary greater than or equal to 5000 and less than or equal to 10000. (2)

v. Write a SQL query to fetch employees' names and salary records. Return employee details even if the salary recird is not present for the employee. (2)

******BEST OF LUCK******