KATHMANDU UNIVERSITY
End Semester Examination
August/September, 2017

Mark Scored :

AUG 31 2017

Level : B. E./B. Sc.
Year : II
Course : COMP 232
Semester : II
Exam Roll No. :
Time: 30 mins.
F. M. : 10
Registration No.:
Date :

SECTION "A"
[20 Q. × 0.5 = 10 marks]

Pick the correct answer(s).

1. _____ is an abstraction in which relationship sets are treated as higher level entity sets, and can participate in relationships.
[ ] Cardinalities [ ] Aggregation [ ] Specialization [ ] Genaralization

2. Which is NOT one of the most common types of SQL CHECK constraints?
[ ] System date
[ ] Range checks
[ ] Lists of values
[ ] Comparing one column value to another within the same table

3. What does Data independence in database design means?
[ ] data are defined separately and not included in programs.
[ ] programs are not dependent on the physical and logical attributes of data.
[ ] programs are not dependent on the logical but dependent on the physical attributes
[ ] programs are not dependent on the physical but dependent on the logical attributes

4. E-R model uses this symbol to represent weak entity set ?
[ ] Dotted rectangle. [ ] Diamond
[ ] Doubly outlined rectangle [ ] None of these

5. The logical operation (FALSE and NULL) will result in _____ state.
[ ] FALSE [ ] NULL [ ] unknown [ ] TRUE

6. A set of possible data values is called
[ ] attribute [ ] degree [ ] tuple [ ] domain

7. Which of the following operation is used if we are interested in only certain columns of a table?
[ ] PROJECTION [ ] SELECTION [ ] UNION [ ] JOIN

8. An instance of relational schema R (A, B, C) has distinct values of A including NULL values. Which one of the following is true?
[ ] A is a candidate key [ ] A is not a candidate key
[ ] A is a primary Key [ ] Both (A) and (C)

9. Architecture of the database can be viewed as
[ ] two levels [ ] four levels [ ] three levels [ ] one level

10. The natural join is equal to :
[ ] Cartesian Product
[ ] Combination of Union and Cartesian product
[ ] Combination of selection and Cartesian product
[ ] Combination of projection and Cartesian product

11. In a _____ index, the index must store a list of pointers to all records with the same search-keyvalue.
[ ] dense clustering
[ ] sparse clustering
[ ] dense non-clustering
[ ] sparse non-clustering

12. The operator preserves unmatched rows of the relations being joined.
[ ] Inner join [ ] Outer join [ ] Union [ ] Union join

13. In a third normal form relation form every _____ attribute is non-transitively and fully dependent on the every candidate key.
[ ] Prime [ ] Non-Prime [ ] Unique [ ] None

14. Date is the type of attribute_____
[ ] Simple [ ] Composite [ ] Single values [ ] Multi valued

15. The function that an entity plays in a relationship is called that entity's _____
[ ] Participation [ ] role [ ] activities [ ] association

16. We say that I and J conflict iff
[ ] They are operation by different transactions on the same data item and one of them instruction is write operation.
[ ] They are operation by same transactions on the same data item and one of them instruction is write operation.
[ ] They are operation by different transactions on the different data item and one of them instruction is write operation.
[ ] They are operation by same transactions on the same data item and one of them instruction is read operation.

17. To include integrity constraint in a existing relation use :
[ ] Create table [ ] Modify table [ ] Alter table [ ] Drop table

18. Data integrity constraints are used to:
[ ] Control who is allowed access to the data
[ ] Ensure that duplicate records are not entered into the table
[ ] Improve the quality of data entered for a specific property (i.e., table column)
[ ] Prevent users from changing the values stored in the table

19. We can define Conceptual design in database management System_____
[ ] as a documentation technique.
[ ] needs data volume and processing frequencies to determine the size of the database.
[ ] involves modeling independent of the DBMS.
[ ] is designing the relational model.

20. To update an SQL view, the DBMS must be able to associate the column(s) to be updated with:
[ ] a particular column in a particular underlying table.
[ ] a particular column in a particular row.
[ ] a particular row in a particular underlying table.
[ ] a particular row in a particular column

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SECTION "B"

[2Q × 8=16 marks]

Answer *ANY TWO* questions.

1. Explain with example what do you mean by **repetition of information** and **inability to represent information**. Discuss two different situations when using traditional record keeping system will be more efficient than using Database management system.

2. Normalize the following relation up to BCNF form, given the functional dependencies.

video(title,director,serial)
customer(name,addr,memberno)
hire(memberno,serial,date)

title->director,serial
serial->title
serial->director
name,addr ->memberno
memberno -> name,addr
serial, date ->memberno

3. Explain the Three Tier Database Architecture with diagram. Discuss the major design issues raised due to the ternary relationship in DBMS.

SECTION "C"

[6Q × 4 = 24 marks]

Attempt *ANY SIX* questions.

4. Explain the concept of using B+ tree in indexing rather using simple indexing mechanism. Construct a B+ tree showing each step for the given set of key values. (2,3,5,7,11,17,19,23,29,31)

5. Consider the following set F of functional dependencies on the relation schema r (A, B, C, D, E, F) and Prove that AF is a super key.

A→BCD
BC→DE
B→D
D→A

6. Why do database system support concurrent execution of transactions, in spite of the extra programming effort which is needed to ensure that concurrent execution does not cause any problems?

7. What is the significance of the Cartesian product operation? Explain its anomalous result with examples.

8. What is the significance of null value? Explain with example how do Null values are treated by aggregation function in SQL?

9. State the conflicting situation in transaction.Explain how the control mechanisms are implemented to manage the conflicting situations?

10. With the help of the schema describe below express the query(a ,b) in either relational algebraic form or in SQL.

Instructor(ID,name.dept_name,salary)
Section(course_id,section_id,semester,year)

a. Give a 5 percent salary raise to the instructors whose salary is less than average salary.
b. Find all the courses taught in the fall 2012 semester but not in spring 2013 semester.