VIT UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)

Term End Examination - November 2012

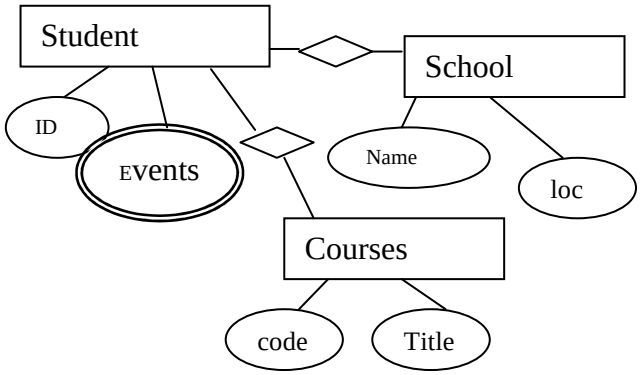
Course : ITE302 - Database Systems **Slot: C2**

Class NBR : 1001

Time : Three Hours **Max.Marks:100**

PART – A (8 X 5 = 40 Marks)
Answer ALL Questions

1. Distinguish between a DBMS and a file system.
2. Name the end users and mention their role in a database system.
3. List the DDL commands and write their application.
4.



a) Identify the structural constraints in the above ER diagram and justify your specifications. **[4]**

b) How many tables will you get if you map this ER to relational schema? **[1]**

5. Define BCNF. Write the algorithm for decomposition with lossless join property to BCNF. With an example explain the decomposition.
6. What is phantom read and dirty read in a uncontrolled transaction?
7. Name the keys of a relational model. Give one (or two) relations as example which contains all keys.
8. Define the data structures used for storing the DB.

PART – B (6 X 10 = 60 Marks)
Answer any SIX Questions

9. With a neat sketch explain the components of a database system.

10. What is logical data independence and physical data independence? With a neat sketch explain how the three schema architecture provides it.

11. Students(regno,name,programme,branch,school)

Faculty(code,name,school)

Gravitas_event(event_name,faculty_coordinator_code)

Gravitas_event(event_name, student_participant_regno)

Gravitas_all(event_name,date,time)

Consider the above relations and answers the queries in relational algebra.

a) Find the number of total students in each school.

b) Find the faculty who are not faculty coordinators in any event.

c) Find the student names who participate in all events.

d) Find the student name and faculty name who belong to same school.

e) Find all the faculty names, school in the database and the faculty name and event name if they are coordinator.

12. Explain the different types of attributes with examples in an ER model.

13. Write the syntax to represent a multivalued, composite and complex attribute in OQL.

14. Consider the universal relation R= { A,B,C,D,E,F,G,H,I,J } and the set of functional dependencies F= { { A,B}→ {C} , {A}→ { D,E} , { B} → { F}, {F}→ {G,H} , {D} → { I,J} }.

a) Find the key for R. **[3]**

b) Decompose R into 2NF. **[4]**

c) Prove that decomposed relations satisfy lossless join property. **[3]**

15. How does two-phase locking protocol guarantee serializability? Justify your answer with relevant examples. 2PL doesn't guarantee occurrence of dead lock. Briefly discuss any two schemes used for preventing deadlock.

16. Compare and contrast the three types of indexes used for reducing the retrieval time of a record in the database.

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