11. What is the need of concurrency control ? Discuss the problems that may occur when two transactions run concurrently. Give the solution to solve this problem.

12. Discuss the relation between the ER model constructs and the relational model constructs. Show how each ER model construct can be mapped to the relational model.

13. Draw the ER diagram for a Library management system.

MCA–13

December – Examination 2022

MCA Examination

Advanced Database Management System

Paper : MCA-13

*Time : **3** Hours*] [*Maximum Marks : **80***

Note :– The question paper is divided into three Sections A, B and C. Write answers as per the given instructions.

Section–A **8×2=16**

(Very Short Answer Type Questions)

Note :– Answer all questions. As per the nature of the question delimit your answer in one word, one sentence or maximum up to **30** words. Each question carries 2 marks.

1. (i) What are the advantages of DBMS ?

   (ii) Define entity type and entity set.

(iii) What is logical data independence ?

(iv) What is Boolean data type ?

(v) What are procedures in SQL ?

(vi) Name the different types of anomalies.

(vii) Write the full form of BCNF.

(viii) What is intention lock ?

Section–B **4×8=32**

(Short Answer Type Questions)

Note :– Answer any *four* questions. Each answer should not exceed **200** words. Each question carries 8 marks.

2. Explain the three level database architecture. What are its objectives ?

3. Briefly describe specialization and generalization in ER model with the help of a suitable example.

4. Discuss the meaning of the existential quantifier ($\exists$) and universal quantifier ($\forall$) with an example.

5. What is a JOIN in SQL ? Explain INNER JOIN and OUTER JOIN in SQL.

6. Consider the relational schema R(ABC) with FDs $AB \rightarrow C$, $C \rightarrow A$. Show that the schema R is in 3NF but not in BCNF.

7. What is a database transaction ? Describe the different operations that are performed during a transaction.

8. Explain how two phase locking protocol guaranty serializability.

9. What is public key infrastructure ? How does it provide security ?

Section–C **2×16=32**

(Long Answer Type Questions)

Note :– Answer any *two* questions. You have to delimit your each answer maximum up to **500** words. Each question carries 16 marks.

10. What is the goal of encryption ? What process is involved in encrypting data and then recovering it at the other end ?