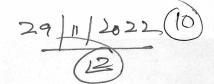# Computer Science and Engineering
National Institute of Technology, Hamirpur

End Semester Examination

Subject: CS-312 **Class: B.Tech.(CSE) 5ᵗʰ Semester(Group CG-1)**
DBMS **Maximum Marks: 50**
Time: 3 hours

Note:-
Attempt all questions.

1. Consider the following relational schema for a library: (16)

   member(memb no, name, dob)
   books(isbn, title, authors, publisher)
   borrowed(memb no, isbn, date)

   Write the following queries in relational algebra and SQL.

   (a) Find the names of members who have borrowed any book published by "McGraw-Hill".

   (b) Find the name of members who have borrowed all books published by "McGraw-Hill".

   (c) Find the name and membership number of members who have borrowed more than five different books published by "McGraw-Hill".

   (d) For each publisher, find the name and membership number of members who have borrowed more than five books by that publisher.

2.. Explain deferred database modification log-based recovery scheme? (4)

3. Explain two phase locking protocol? What is the difference between strict and rigorous two-phase locking protocol? (5)

4. DBMS should be able to prevent a deadlock among transactions. What is a deadlock? Explain wound wait deadlock prevention strategy? (5)

5. Write short notes on distributed databases and ACID properties? (5)

6. Explain basic steps of query processing, with the help of a neat diagram? (5)

7. What is a weak entity set? How is it represented in ER diagrams? (5)

8. How are privileges granted and revoked in SQL? Explain with suitable examples? (5)