Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	28 February 2026
Team ID	LTVIP2026TMIDS46423
Project Name	Intelligent SQL Querying with LLMs Using Gemini Pro
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Input Interface	Accept natural language query through text input
		Provide clear input field with instructions
		Validate user input before processing
FR-2	Natural Language Processing	Send input to LLM model
		Convert natural language to SQL query
		Optimize prompt engineering for accurate SQL
FR-3	SQL Query Validation	Check generated SQL syntax
		Prevent harmful or destructive queries (DROP, DELETE without restriction)
		Validate table and column names
FR-4	Database Connectivity	Establish secure database connection
		Execute generated SQL query
		Handle query execution errors
FR-5	Output Display	Display generated SQL query
		Show query results in tabular format
		Provide error message if query fails
FR-6	Logging & Monitoring	Maintain logs of generated queries
		Track execution time
		Monitor API usage

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	The system must provide a simple and intuitive interface for non-technical users.
NFR-2	Security	Secure database connection and prevention of SQL injection or destructive queries.
NFR-3	Reliability	The system should consistently generate accurate SQL queries with minimal errors.
NFR-4	Performance	Response time should be within 2–5 seconds under normal load.
NFR-5	Availability	The system should be available 24/7 with minimal downtime.
NFR-6	Scalability	The architecture should support increasing users and larger datasets.
NFR-7	Maintainability	Codebase should be modular and easy to update.
NFR-8	Compatibility	The system should support multiple relational databases (future scope).