Project Design Phase
Proposed Solution Template

Date	04 February 2026
Team ID	LTVIP2026TMIDS56565
Project Name	Rising Waters: A Machine Learning Approach to Flood Prediction
Maximum Marks	2 Marks

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Floods cause significant loss of life and infrastructure due to late or inaccurate warnings. Existing systems often lack real-time integration of diverse environmental factors like soil type and river discharge.
2.	Idea / Solution description	A Flask-based web application that uses a **Random Forest Classifier** to predict flood risks. It processes 13 features including rainfall, water level, and land cover to provide "DANGER" or "SAFE" alerts.
3.	Novelty / Uniqueness	Uses an ensemble learning approach (Random Forest) for better stability. It features a lightweight deployment through Flask and incorporates specific categorical encoders for soil and land types.
4.	Social Impact / Customer Satisfaction	Provides early warning to flood-prone communities, enabling timely evacuation and resource allocation for emergency services.
5.	Business Model (Revenue Model)	-Can be offered as a SaaS (Software as a Service) to municipal authorities or integrated into existing weather monitoring platforms via API.
6.	Scalability of the Solution	The modular design allows adding more features (like satellite imagery) or expanding to different geographical regions by retraining the model on new CSV datasets.