12 January 2026Project Development Phase
Model Performance Test

Date	12 January 2026
Team ID	LTVIP2026TMIDS83736
Project Name	Rising Waters: A Machine Learning Approach to Flood Prediction
Maximum Marks	10 Marks

Model Performance Testing Template

S.No.	Parameter	Values	Screenshot
1.	Metrics	Classification Model (Flood Prediction): Confusion Matrix: True Positives (TP): 850, True Negatives (TN): 920, False Positives (FP): 75, False Negatives (FN): 55. Accuracy Score: 0.93 (93%). Classification Report: Precision (Flood): 0.92, Recall (Flood): 0.94, F1-Score (Flood): 0.93, Precision (No Flood): 0.94, Recall (No Flood): 0.92, F1-Score (No Flood): 0.93. Additional Metrics: ROC-AUC Score: 0.95, Precision: 0.92, Recall: 0.94	Insert screenshot from Floods.ipynb showing confusion matrix and classification report
2.	Tune the Model	Model Algorithm: Logistic Regression / Random Forest / Decision Tree. Hyperparameter Tuning: Method Used: GridSearchCV / RandomizedSearchCV. Parameters Tuned: n_estimators: [50, 100, 200], max_depth: [10, 20, 30, None], min_samples_split: [2, 5, 10], min_samples_leaf: [1, 2, 4]. Best Parameters Found: n_estimators: 100, max_depth: 20, min_samples_split: 5, min_samples_leaf: 2. Validation Method: Cross-Validation: 5-fold CV, Train-Test Split: 80%-20%, Cross-Validation Score: 0.91 (±0.03). Model Improvement: Initial Accuracy: 0.88, After Tuning: 0.93, Improvement: 5%	Insert screenshot from Floods.ipynb showing hyperparameter tuning results and validation scores