=== Class Ratio Before SMOTIFIED-GAN ===

Proportion

Legitimate 0.8

Phishing 0.2

**952/952** ━━━━━━━━━━━━━━━━━━━━ **2s** 2ms/step

=== Class Ratio After SMOTIFIED-GAN ===

Proportion

Phishing 0.5

Legitimate 0.5

=== Model Ranking on Train Set ===

Ranking by Accuracy:

Model

Random Forest 0.926539

Stacking Ensemble 0.923599

XGBoost 0.920166

CatBoost 0.919689

Logistic Regression 0.904541

Name: Accuracy, dtype: float64

Ranking by Precision:

Model

Random Forest 0.891621

Stacking Ensemble 0.888516

XGBoost 0.883903

CatBoost 0.881632

Logistic Regression 0.844769

Name: Precision, dtype: float64

Ranking by Recall:

Model

Logistic Regression 0.991225

Random Forest 0.971121

CatBoost 0.969550

Stacking Ensemble 0.968750

XGBoost 0.967395

Name: Recall, dtype: float64

Ranking by F1 Score:

Model

Random Forest 0.929675

Stacking Ensemble 0.926900

XGBoost 0.923767

CatBoost 0.923503

Logistic Regression 0.912156

Name: F1 Score, dtype: float64

Ranking by ROC-AUC:

Model

Random Forest 0.926539

Stacking Ensemble 0.923599

XGBoost 0.920166

CatBoost 0.919689

Logistic Regression 0.904541

Name: ROC-AUC, dtype: float64

=== Model Ranking on Test Set ===

Ranking by Accuracy:

Model

Stacking Ensemble 0.862851

XGBoost 0.861471

Random Forest 0.861287

CatBoost 0.861149

Logistic Regression 0.841333

Name: Accuracy, dtype: float64

Ranking by Precision:

Model

Stacking Ensemble 0.613444

Random Forest 0.610586

XGBoost 0.610114

CatBoost 0.607536

Logistic Regression 0.560474

Name: Precision, dtype: float64

Ranking by Recall:

Model

Logistic Regression 0.957701

CatBoost 0.863678

XGBoost 0.851494

Stacking Ensemble 0.849655

Random Forest 0.845977

Name: Recall, dtype: float64

Ranking by F1 Score:

Model

CatBoost 0.713309

Stacking Ensemble 0.712482

XGBoost 0.710872

Random Forest 0.709261

Logistic Regression 0.707120

Name: F1 Score, dtype: float64

Ranking by ROC-AUC:

Model

Logistic Regression 0.884971

CatBoost 0.862098

Stacking Ensemble 0.857902

XGBoost 0.857730

Random Forest 0.855546

Name: ROC-AUC, dtype: float64

=== Cross-Validation Scores ===

Accuracy F1 Score ROC-AUC

Logistic Regression 0.903670 0.911410 0.895387

Random Forest 0.914606 0.918473 0.942862

XGBoost 0.914606 0.918750 0.943423

CatBoost 0.914557 0.918587 0.943282

Stacking Ensemble 0.915369 0.919424 0.912288