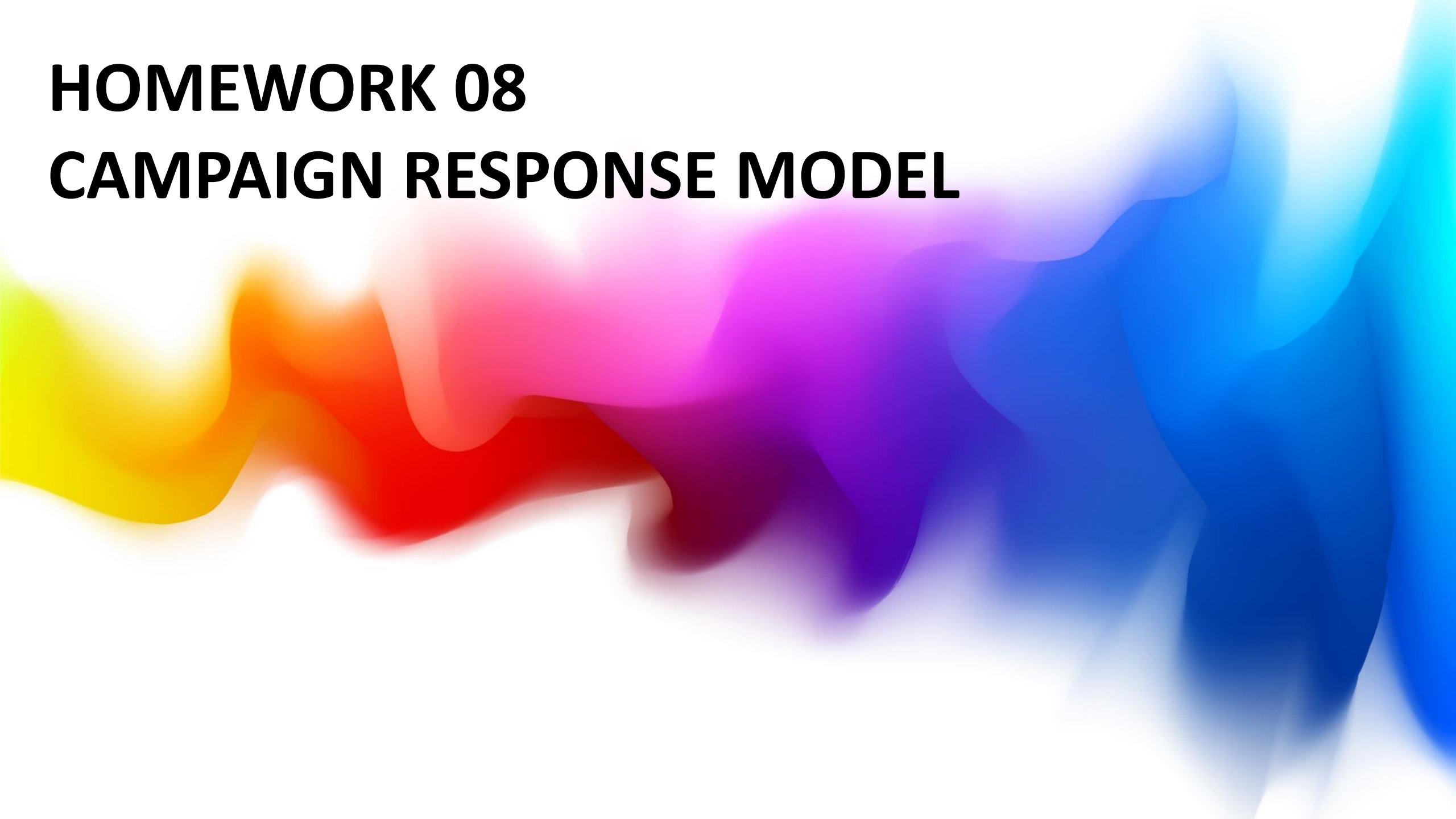
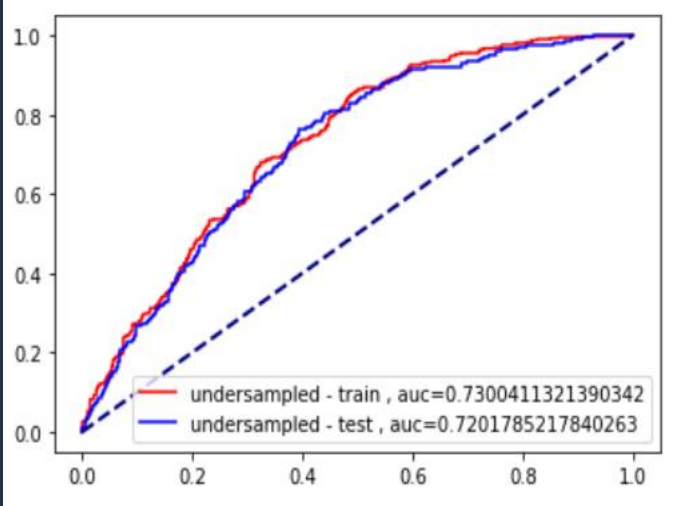
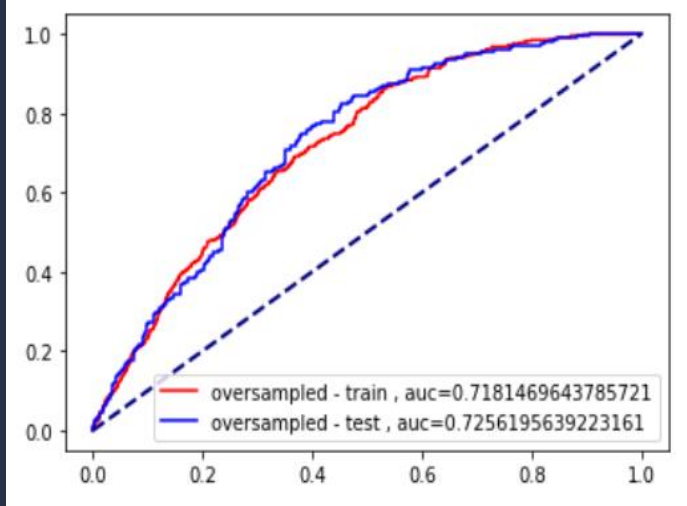
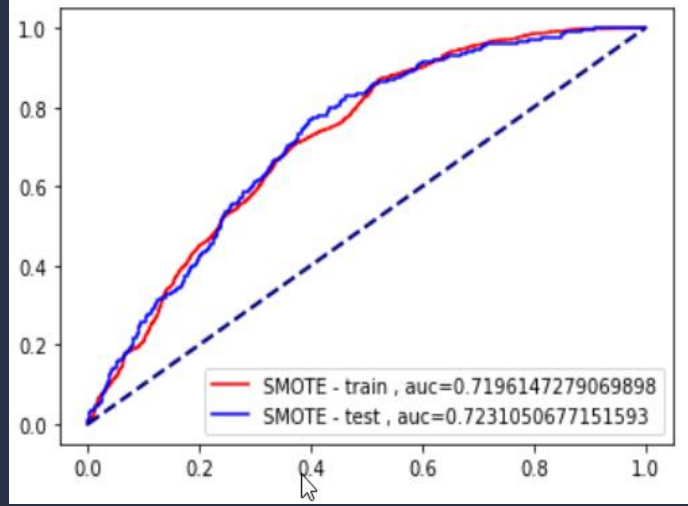
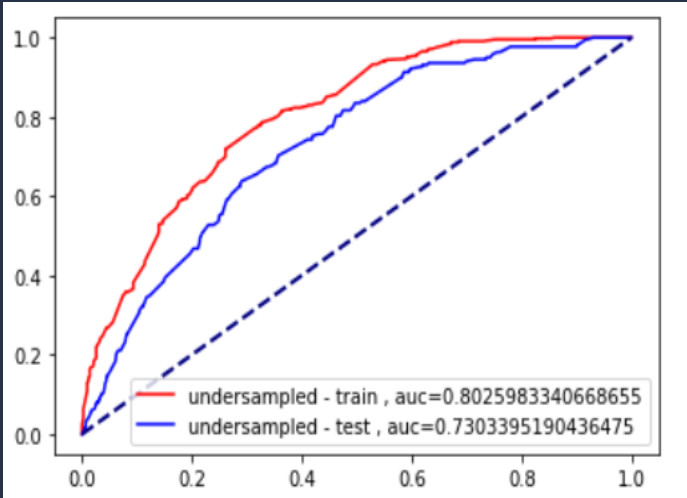
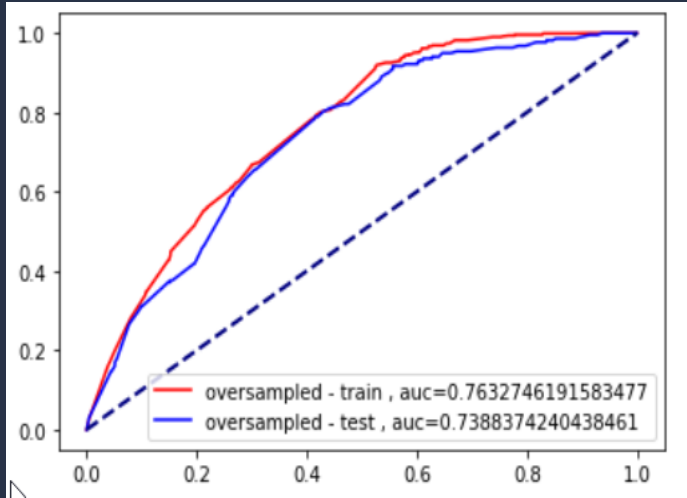
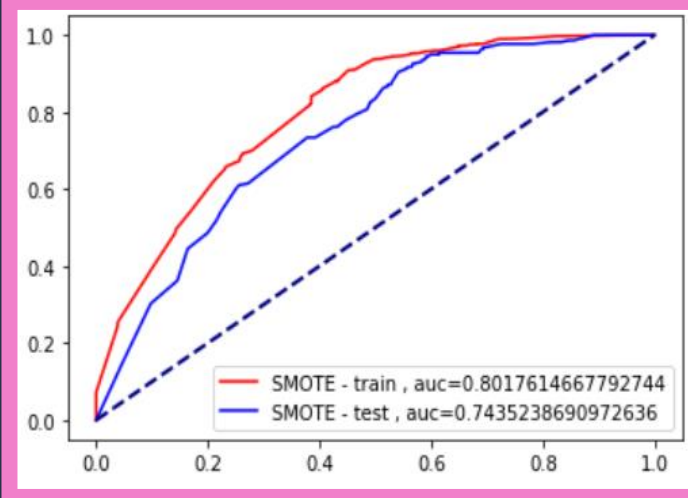


HOMEWORK 08

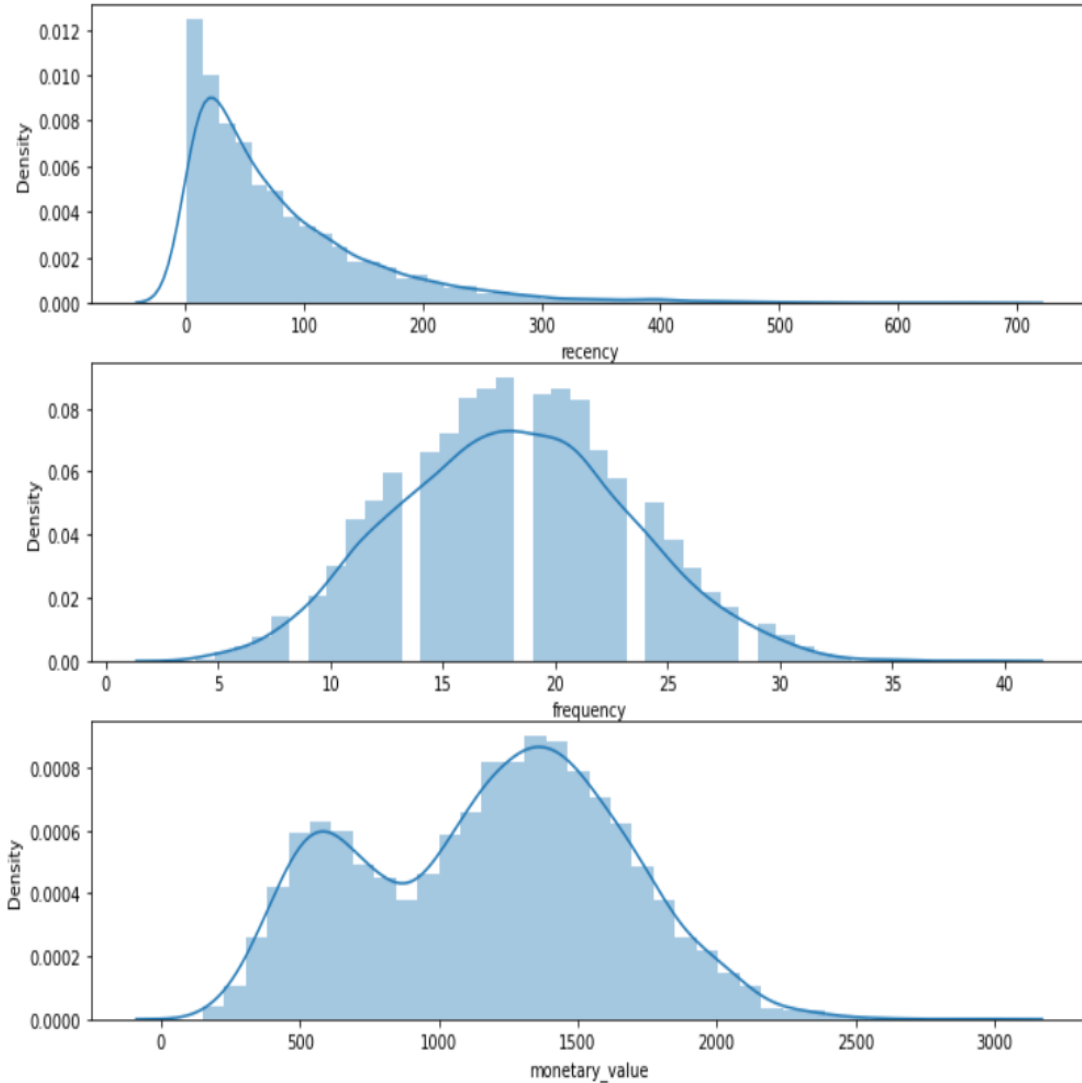
CAMPAIGN RESPONSE MODEL



Result : Before Coding improvement

	Under Sampling	Over Sampling	Smote
Logistics regression	 <p>undersampled - train , auc=0.7300411321390342 undersampled - test , auc=0.7201785217840263</p>	 <p>oversampled - train , auc=0.7181469643785721 oversampled - test , auc=0.7256195639223161</p>	 <p>SMOTE - train , auc=0.7196147279069898 SMOTE - test , auc=0.7231050677151593</p>
XGBoost	 <p>undersampled - train , auc=0.8025983340668655 undersampled - test , auc=0.7303395190436475</p>	 <p>oversampled - train , auc=0.7632746191583477 oversampled - test , auc=0.7388374240438461</p>	 <p>SMOTE - train , auc=0.8017614667792744 SMOTE - test , auc=0.7435238690972636</p>

DISTRIBUTION PLOT

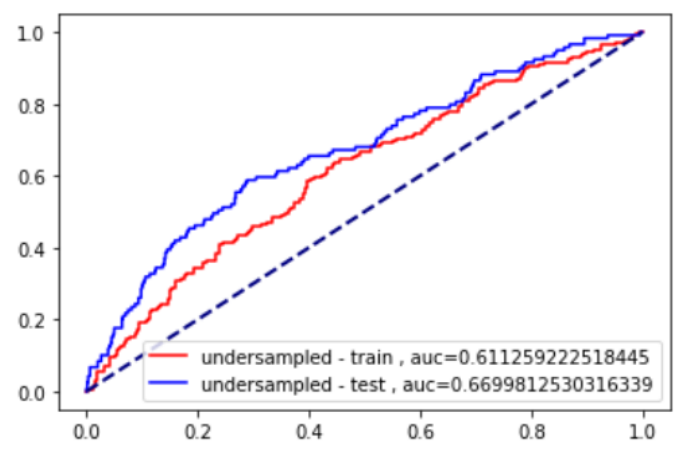
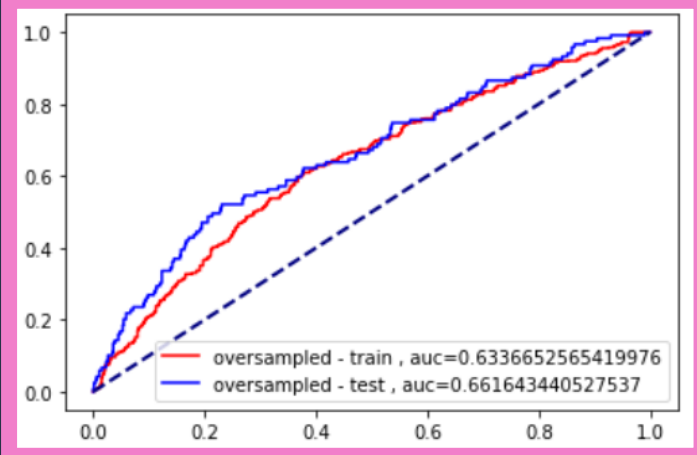
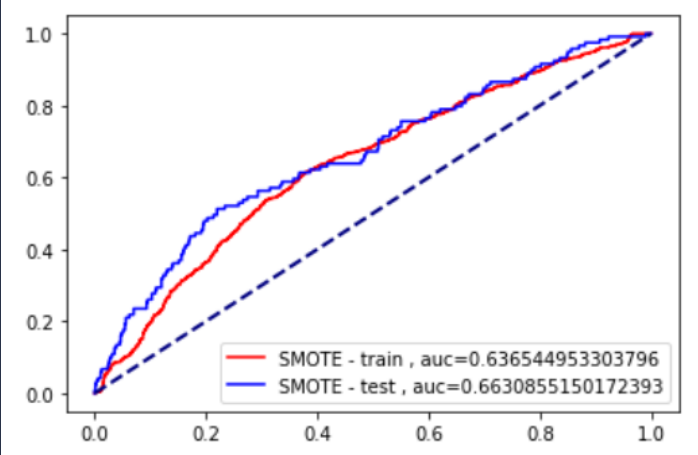
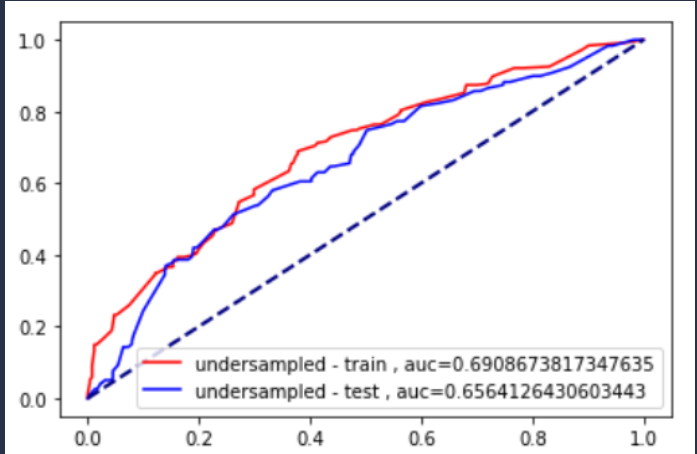
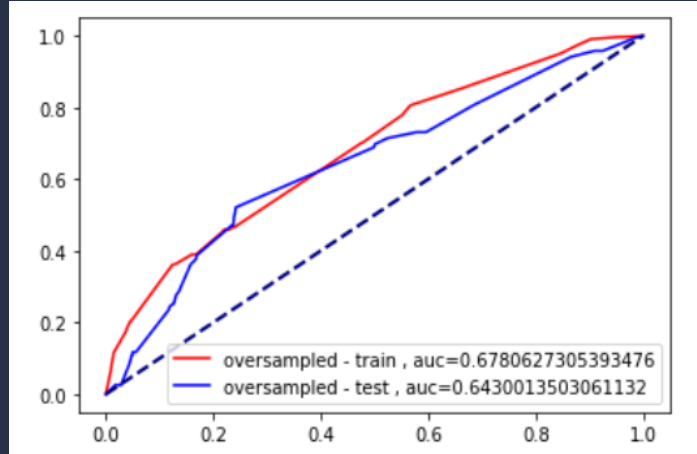
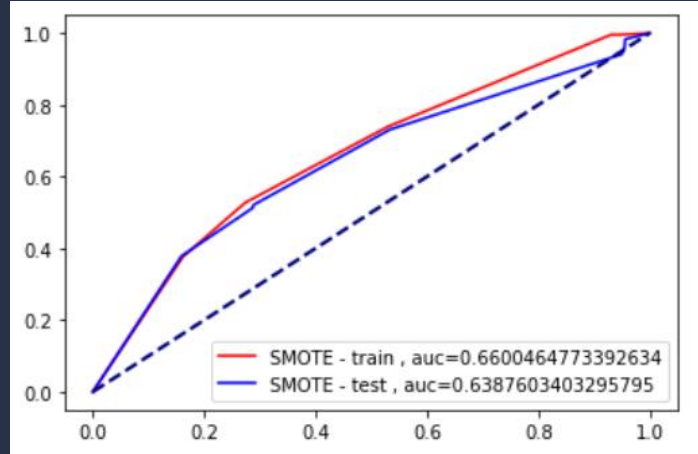


RFM MODEL (7 CUSTOMER LEVEL)



	recency mean	frequency mean	monetary_value mean	count
RFM_Level				
Can't Loose Them	41.3	23.2	1625.4	2533
Champions	57.1	18.8	1264.1	844
Loyal	81.0	17.5	1136.0	850
Needs Attention	131.4	12.7	649.5	548
Potential	70.0	15.0	893.7	827
Promising	109.2	14.1	818.9	737
Require Activation	231.0	10.8	502.9	545

LEVEL1 : Can't loose them

	Under Sampling	Over Sampling	Smote
Logistics regression	 <p>undersampled - train , auc=0.611259222518445 undersampled - test , auc=0.6699812530316339</p>	 <p>oversampled - train , auc=0.6336652565419976 oversampled - test , auc=0.661643440527537</p>	 <p>SMOTE - train , auc=0.636544953303796 SMOTE - test , auc=0.6630855150172393</p>
XGBoost	 <p>undersampled - train , auc=0.6908673817347635 undersampled - test , auc=0.6564126430603443</p>	 <p>oversampled - train , auc=0.6780627305393476 oversampled - test , auc=0.6430013503061132</p>	 <p>SMOTE - train , auc=0.6600464773392634 SMOTE - test , auc=0.6387603403295795</p>

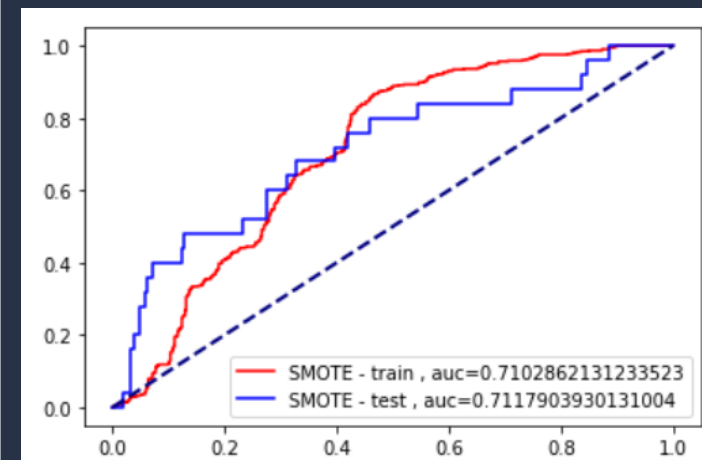
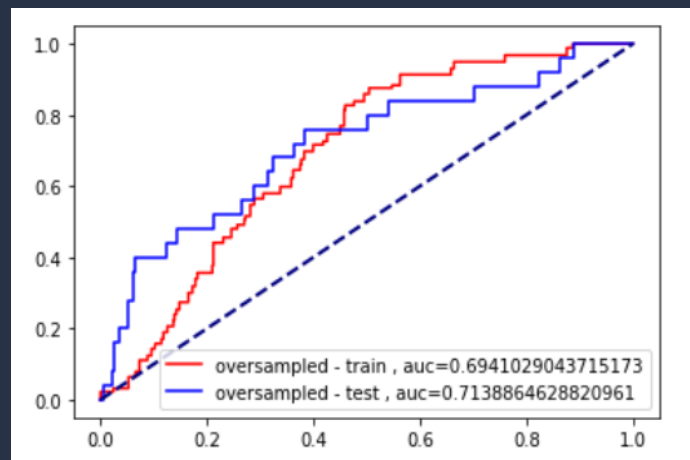
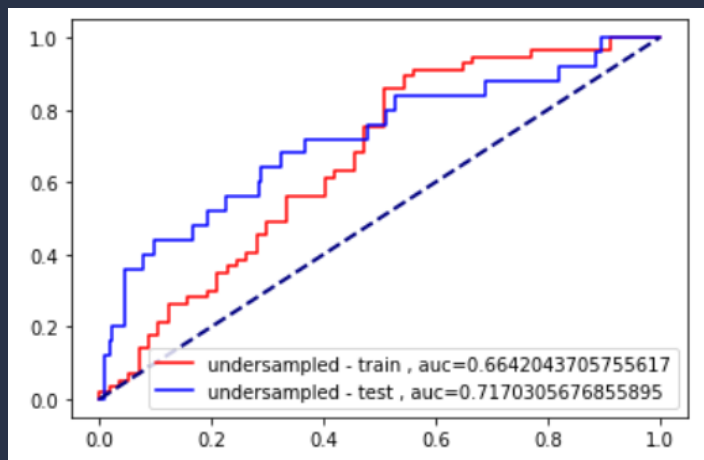
LEVEL2 : Champion

Under Sampling

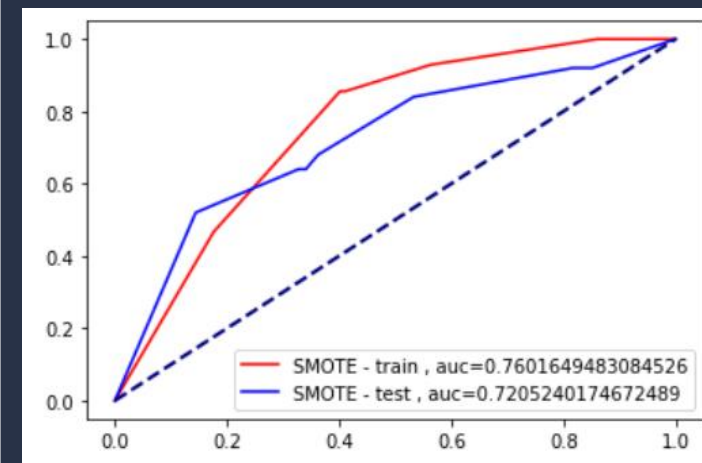
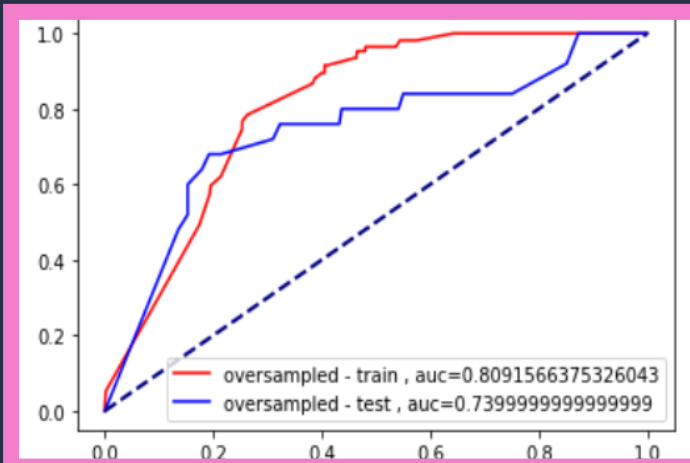
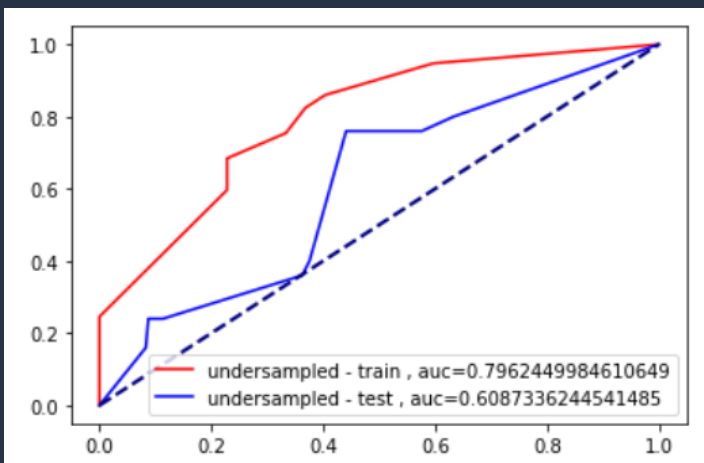
Over Sampling

Smote

Logistics regression



XGBoost



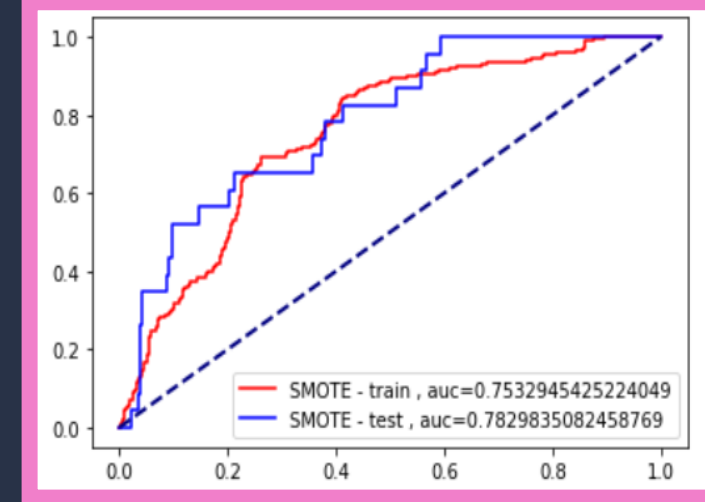
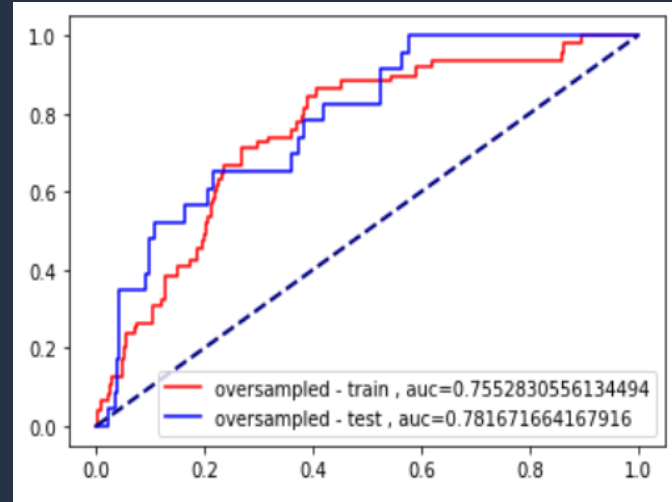
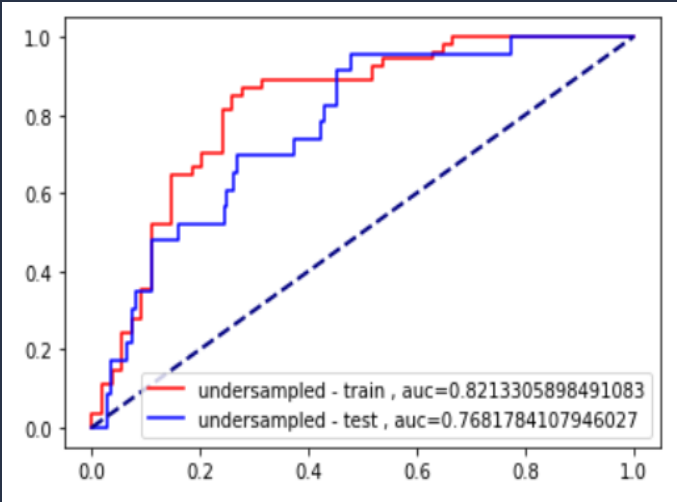
LEVEL3 : Loyal

Under Sampling

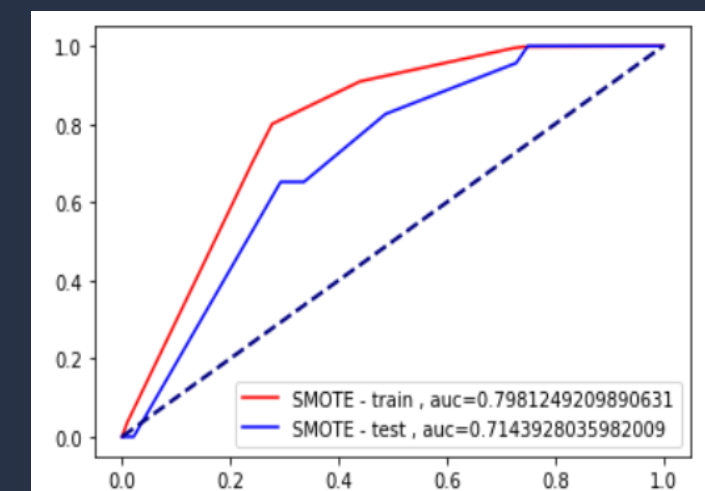
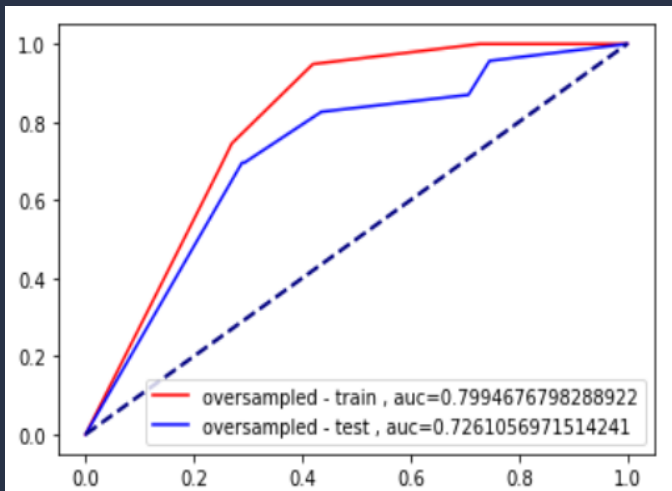
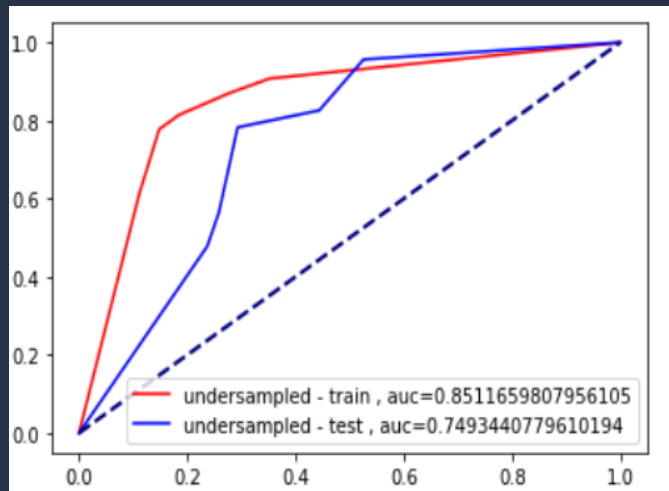
Over Sampling

Smote

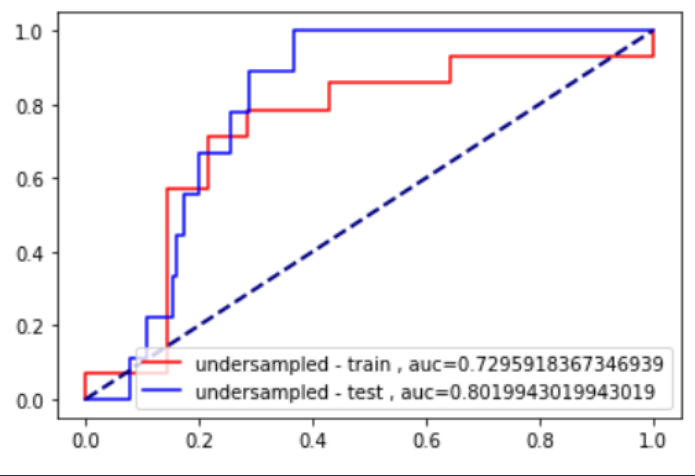
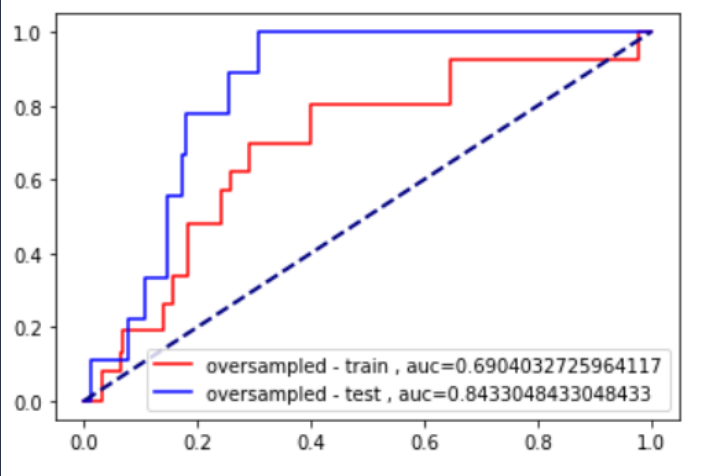
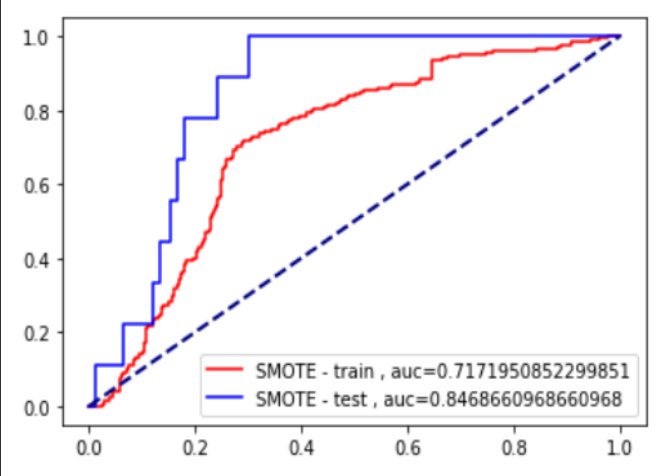
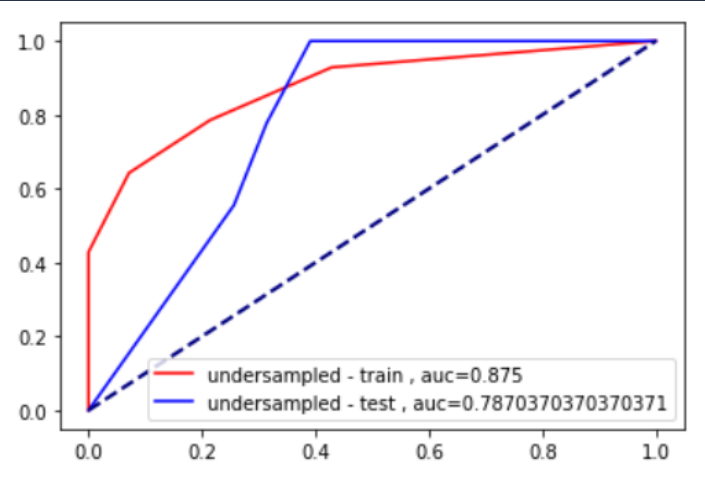
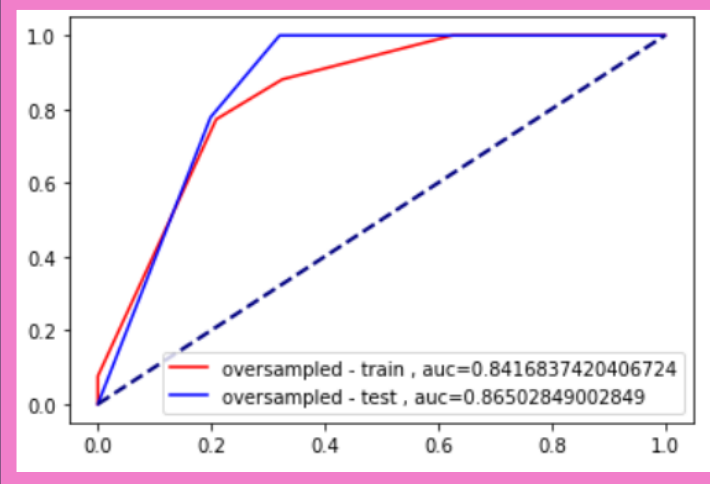
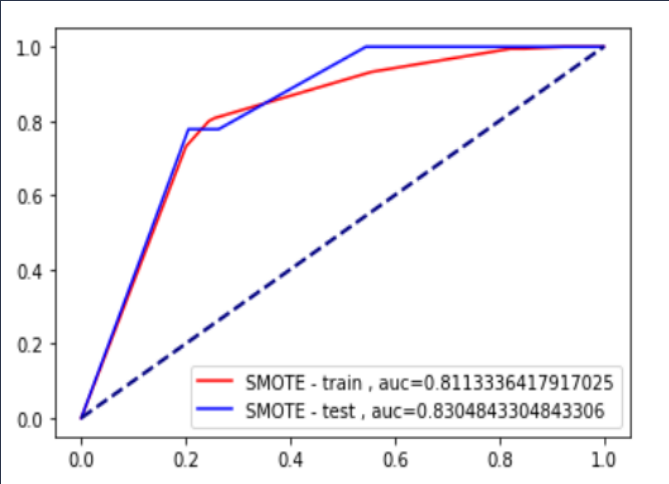
Logistics regression



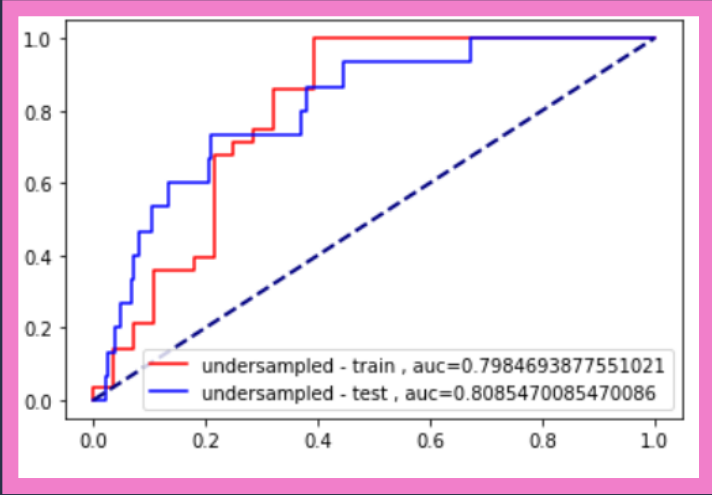
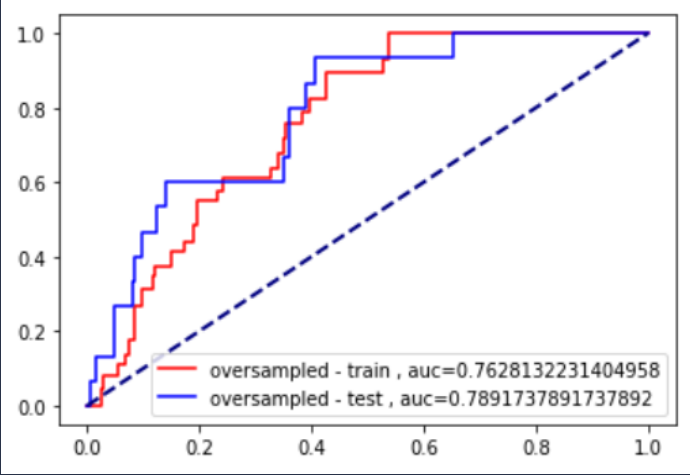
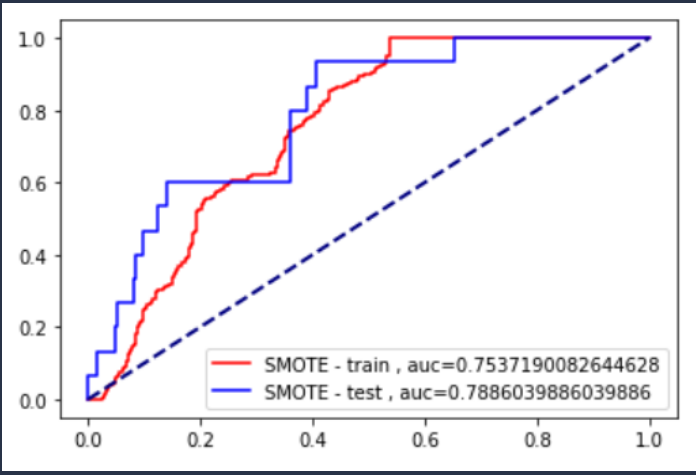
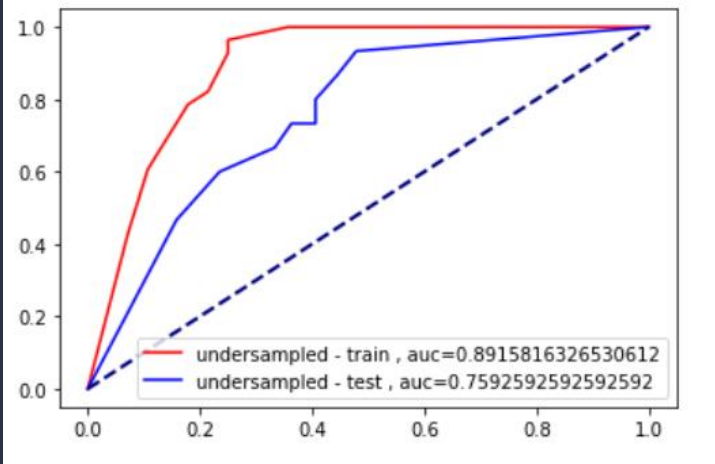
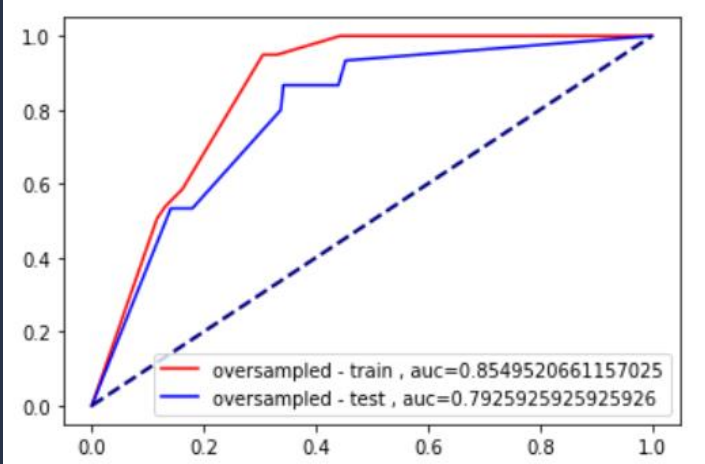
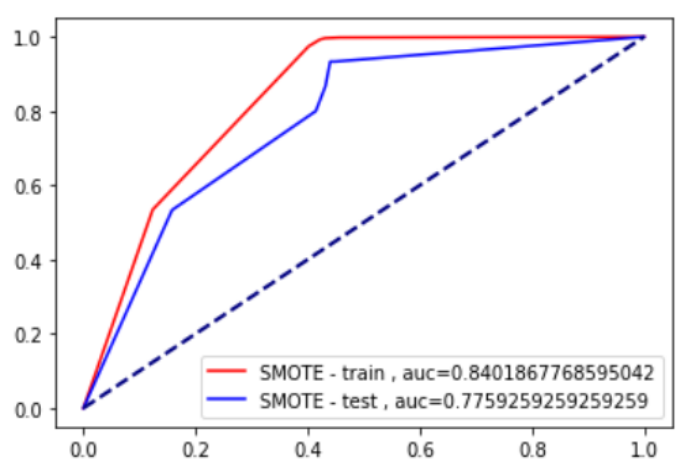
XGBoost



LEVEL4 : Need attention

	Under Sampling	Over Sampling	Smote
Logistics regression			
XGBoost			

LEVEL5 : Potential

	Under Sampling	Over Sampling	Smote
Logistics regression	 <p>undersampled - train , auc=0.7984693877551021 undersampled - test , auc=0.8085470085470086</p>	 <p>oversampled - train , auc=0.7628132231404958 oversampled - test , auc=0.7891737891737892</p>	 <p>SMOTE - train , auc=0.7537190082644628 SMOTE - test , auc=0.7886039886039886</p>
XGBoost	 <p>undersampled - train , auc=0.8915816326530612 undersampled - test , auc=0.7592592592592592</p>	 <p>oversampled - train , auc=0.8549520661157025 oversampled - test , auc=0.7925925925925926</p>	 <p>SMOTE - train , auc=0.8401867768595042 SMOTE - test , auc=0.7759259259259259</p>

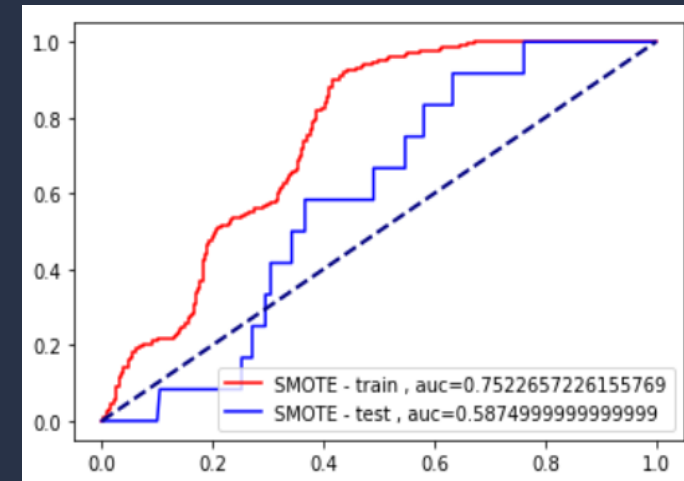
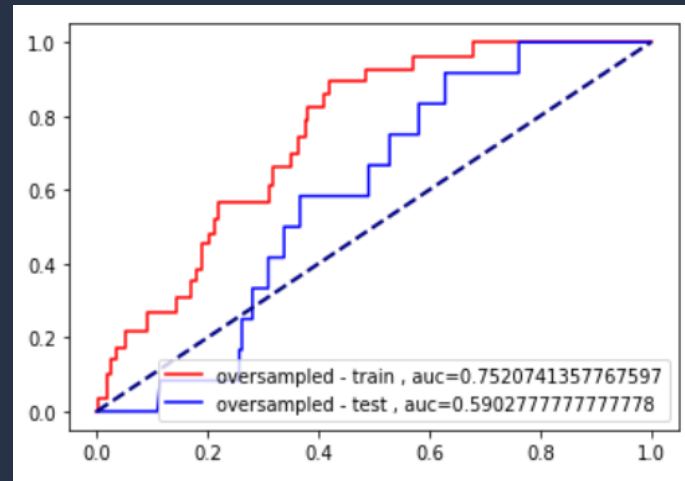
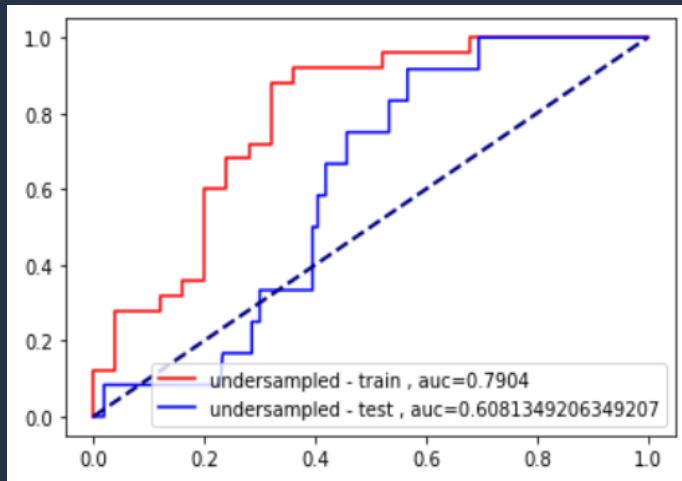
LEVEL6 : Promising

Under Sampling

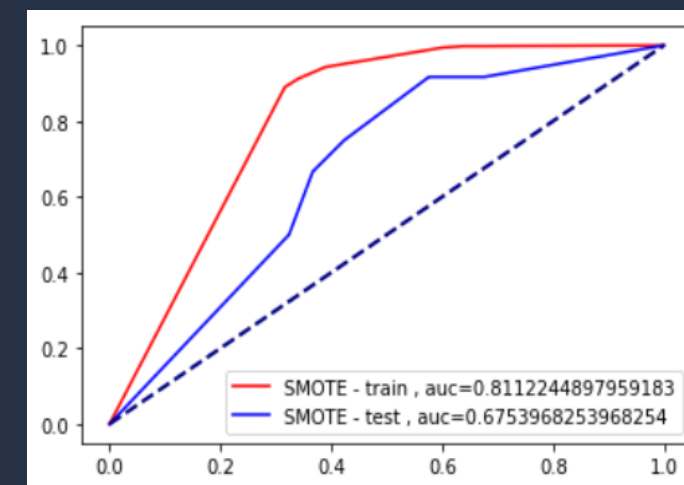
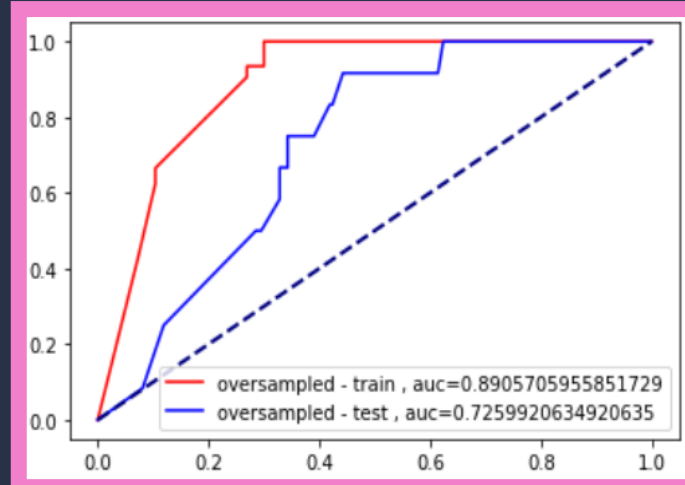
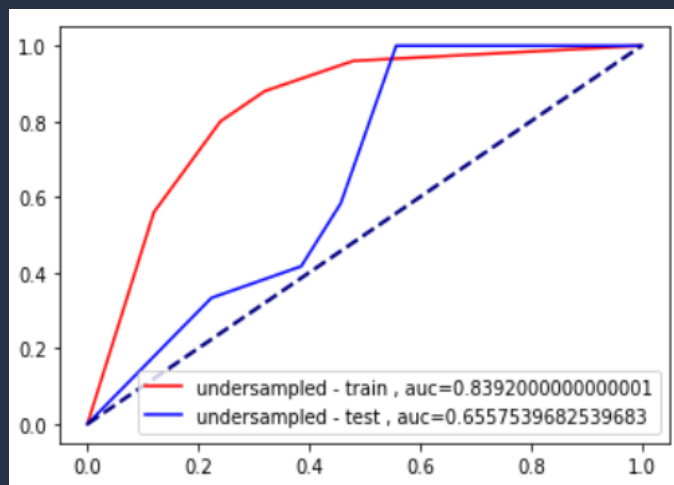
Over Sampling

Smote

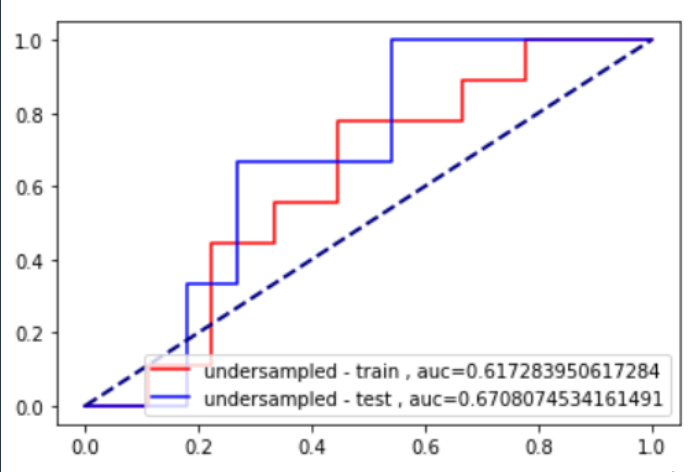
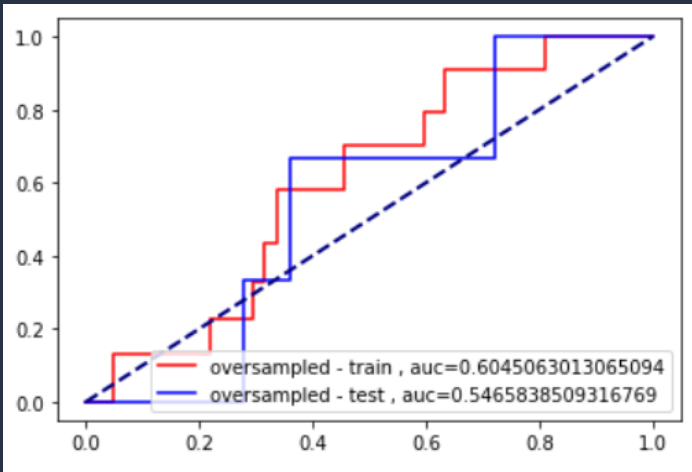
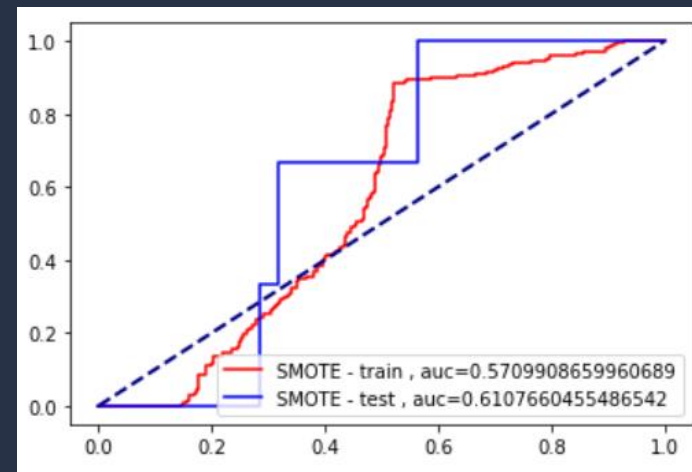
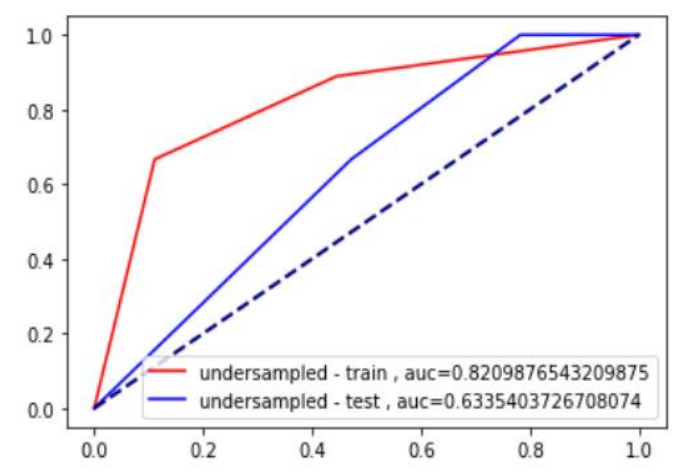
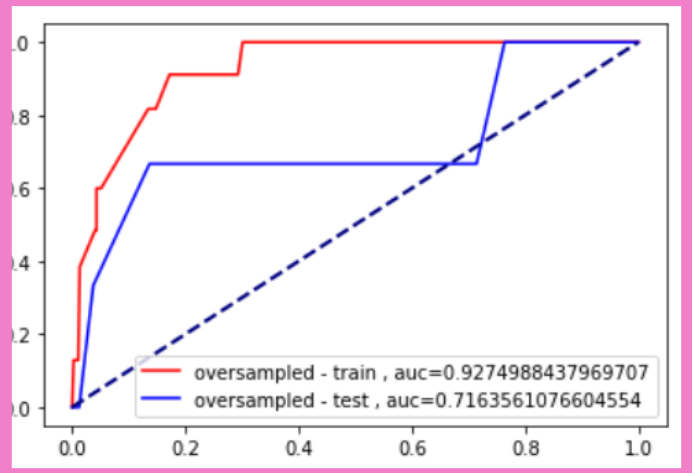
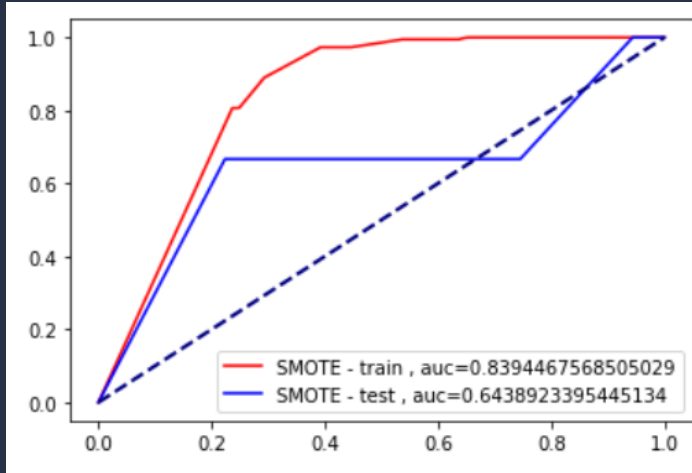
Logistics regression



XGBoost



LEVEL7 : Require Activation

	Under Sampling	Over Sampling	Smote
Logistics regression	 <p>undersampled - train , auc=0.617283950617284 undersampled - test , auc=0.6708074534161491</p>	 <p>oversampled - train , auc=0.6045063013065094 oversampled - test , auc=0.5465838509316769</p>	 <p>SMOTE - train , auc=0.5709908659960689 SMOTE - test , auc=0.6107660455486542</p>
XGBoost	 <p>undersampled - train , auc=0.8209876543209875 undersampled - test , auc=0.6335403726708074</p>	 <p>oversampled - train , auc=0.9274988437969707 oversampled - test , auc=0.7163561076604554</p>	 <p>SMOTE - train , auc=0.8394467568505029 SMOTE - test , auc=0.6438923395445134</p>