1 a. My predictive model is:

-((Standardized Income + Standardized Credit Card Debt + Standardized Automobile Debt) ◆ 10 * (Standardized Age + Standardized Years at Employer))

Applying the model:

the Area Under the Curve (AUC) is .73.

the Minimum Cost Per Event is $891.5 and is at threshold -1.2.

b. Refer to the text box below for a response to part b of the question.

2 Using the predictive model, the applicant listed in the question would have the following score:

-((Standardized Income + Standardized Credit Card Debt + Standardized Automobile Debt) ◆ 10 * (Standardized Age + Standardized Years at Employer))

-((-0.38 + .14 + -0.06) ◆ 10 * (-0.06 + .23)) = 2.00

Since 2.00 is higher than the threshold of -1.2 (previously stated), the applicant would be included in the selection (would be approved).

3 Using the predictive model on the Training Set, the average profit per applicant is:

141(True Positive Count) * 4,000 (Average Profits per Profitable Customer) = $564,000

+

7 (False Negative Count) * -4,900 (Average Loses per Unprofitable Customer) = -34,300

= $529,700

Divided by 200

= $2,648.50

4 Using the predictive model (compared to no model), the incremental financial value on the Training Set is:
4,900 (Cost per False Negative) * 25% (proportion of unprofitable applicants) = $1,225
-
$891.5 (Predictive Model Minimum Cost per Event)
= $333.5

5 Evaluate your model on the Test Set data. How confident are you that your model does not over-fit the Training Set data? The only basis to evaluate over-fitting is to give the same metrics on the Test Set and Training Set, and compare them. Refer to the text box below for a response concerning over-fitting.

6 Evaluate your model on the Test Set data. How confident are you that your model does not over-fit the Training Set data?

A. Choose between three broad degrees of confidence: ◆very◆ ◆somewhat◆ or ◆not at all.◆ (Note that ◆not at all◆ is still an acceptable answer if you give persuasive reasons for why you chose this answer).

B. Explain the evidence your degree of confidence is based upon. Your explanation should include the test set profits and training set profits per applicant.

How much confidence to have in the model must relate to the relationship between the profits-per-applicant on the Training Set and the Test Set
Using the predictive model on the Test Set, the Area Under the Curve (AUC) is .74. Additionally, using the threshold of -1.2 (from the predictive model on the training set), the minimum cost per event $1,192. Using the test set data, the average profit per applicant is:
134 (True Positive Count) * 4,000 (Average Profits per Profitable Customer) = $536,000
+
16 (False Negative Count) * -4,900 (Average Loses per Unprofitable Customer) = -78,400
= $457,600
Divided by 200
= $2,288.00

Since the average profit is lower under the Test Set (compared to the Training Set) but higher than the average profit per applicant using no model, I am somewhat confidant that the predictive model does not over-fit the Training Set data.