An Automobile company is thinking of launching its existing products (P1, P2, P3, P4 and P5) into a new market. Consumer behavior of new market is similar to the existing market. The company is having consumer data of its existing customers and 500 new customers have been identified in the new market who may buy its products. The marketing manager has clear understanding that it is the income level which drives the purchase of different cars. Based on existing data and a recent survey he created the following table. The cell values are probability of purchasing the products

Income Level	P1	P2	P3	P4	P5
Low	90%	7%	3%	0%	0%
Medium	43%	33%	23%	1%	0%
High	0%	3%	22%	24%	51%

Price of the products are as given below:

	P1	P2	P3	P4	P5
Price	160000	230000	360000	620000	900000

The manager has decided that income group 0,1,2,3 belong to “Low” category, 4,5,6 belong to “Medium” category and 7,8 belong to “High” category. Being an MBA graduate, he could formulate three basic strategies to design the campaign:
1. All belong to low income group (total expected revenue is 8.54 Cr)
2. All belong to high income group (total expected revenue is 34.69 Cr)
3. All belong to medium income group (total expected revenue is 11.68 Cr)

However, he knows that the disadvantage of running same campaign to different customer segments. Hence he thought of running three different campaigns for three different income groups. Based on his prior experience, he could estimate the cost of loss of goodwill if he runs one campaign for a segment of customer for which the campaign is not meant for. The following table gives the cost matrix as cost per customer.

	Low Income	Medium Income	High Income
Campaign 1	NIL	150000	300000
Campaign 2	60000	NIL	210000
Campaign 3	70000	120000	NIL

Help the manager to target right customers with right campaign for the new customers i.e. predict the income group of the new customers (it must be either “Low” or “Medium” or “High”). Also, estimate the expected revenue.

Even though the variables are all integers, they are actually categorical in nature. Moreover, the datasets contain missing values. While building the model, make sure to put na.action=NULL in both train() function and predict() function (provided you use caret package). If you forget to put na.action=NULL while predicting the class of new customers, not all customer will be evaluated by the model and that is not accepted. Remember, not all models can handle missing values in data.

Your final objectives:
1. Predict income class of 500 new customers
2. Estimate expected revenue from these 500 customers