* **Question 1**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Choose all that is true. The goal of optimization modeling is to:*  a) find the best values of the variables for a particular criterion or the best decisions for a particular measure of performance.  b) determine the best combination of promotional offers, delivery channels, and customers to maximize the overall return on marketing investment.  c) choose which suppliers to deal with in order to satisfy requirements and maximize leverage, rating suppliers using a variety of criteria simultaneously.  d) establish and maintain optimal everyday prices based on costs, regional demand patterns, and competitive price information. |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct  All of the above | |  |  |  |

* **Question 2**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Which statement below is not true?* |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct  d) Decision Variables – known variables to determine the best measure of performance. | |  |  |  |

* **Question 3**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Choose all that describes linear programming:*  a) There are no constraints or bounds  b) Exhibits proportionality (contribution from any given decision variable to the objective grows in proportion to its value).  c) Is additive (contribution from one decision is added to contributions of other decisions).  d) Is divisible (fractional decision variable is meaningful). |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct  b, c, d | |  |  |  |

* **Question 4**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Choose all that describes the Simplex method in optimization modeling:*  a) Smooth  b) Linear  c) Non-linear  d) Disjoint |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct  a, b | |  |  | |  |  |  |

* **Question 5**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Choose all that describes cluster analysis:*  a) Partition/classify data into groups/objects (in our case, individuals, households or families) so that each object in a cluster is similar to the other objects in the same cluster; however objects in different clusters are dissimilar to each other.  b) Data-driven partitioning techniques designed to group a collection of objects into clusters. Its about data explorations, searching for patterns in complex data, that is conducted in repetitive fashion. Finding these patterns can lead to business decisions.  c) Constructing a (hopefully) sensible and informative classification of an initially unclassified set of data, using the variable values observed on each individual.  d) Is a mathematical technique for allocating limited resources in an optimum manner. |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct  a, b, c | |  |  |  |

* **Question 6**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Which does not describe k in k-means clustering?* |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct   # of members | |  |  |  |

* **Question 7**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Choose all that describes profiling:*  a) Compare distribution and mean of each variable across clusters.  b) Determine whether members in one cluster differ from the members in another cluster with regard to the base variables.  c) Determine how members in a particular cluster differ from all the members in the data (population) with regard to the base variables.  d) Compare mean of each variable in a cluster with the mean for the same variable for the entire data (population).  e) Compare distribution of each variable in a cluster with the distribution of the same variable for the entire data (population). |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct  All of the above | |  |  |  |

* **Question 8**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | What does the following describe?  *"Learning from raw data (no examples of correct classification). In other words, class label (e.g., income bands, purchase power, etc.) information is unavailable. Set the model’s parameters without prior knowledge about the classification of samples.“* |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct  Unsupervised learning | |  |  |  |

* **Question 9**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Choose all that is true:*  a) The initialization method used by the FASTCLUS procedure makes it sensitive to outliers.  b) The CLUSTER procedure is intended for use with large data sets, with 100 or more observations.  c) Order effect describes the high sensitivity to the order of the observations in the data set.  d) Most cluster solutions are affected heavily by presence of outliers and/or observations that are just too different from the others.  e) If PROC FASTCLUS runs to complete convergence, the final cluster seeds will equal the cluster means or cluster centers.  f) The time required by PROC FASTCLUS is roughly proportional to the number of observations. |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct  a, c, d, e, f | |  |  |  |

* **Question 10**

0 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Which procedure can you use if you have a matrix of binary data?* |  |  |  |
| |  |  | | --- | --- | | Answers: |  | |  | Correct  PROC CLUSTER | |  |  |  |

* **Question 11**

5 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *Choose all that is true:*  a) Hierarchical clustering is used in PROC FASTCLUS  b) K-means clustering is used in PROC CLUSTER  c) You can run PROC FASTCLUS without a predetermined k (# of clusters) value |  |  |  |
| |  |  | | --- | --- | | Selected Answer: | Correct  None of the above | |  |  |  |

* **Question 12**

0 out of 5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | *What does PROC CONTENTS provide?*  a) Shows the contents of a SAS data set and prints the directory of the SAS library.  b) Shows the contents of a SAS data set and manage libraries.  c) Shows the data portion of a SAS data set. |  |  |  |
| |  |  | | --- | --- | | Answers: | Correct  a | |  |  |  |