Decision Modelling (NPTEL Online Course)

Tutorial 1 (Decision Analysis - Module 1 to Module 5)

1) This type of decision makers use incomplete and imperfect information and tend to satisfice:
   i. Normative
   ii. Descriptive
   iii. None of the above

2) This type of decision makers use a structured procedure of developing and analyzing decision alternatives before selecting the best choice:
   i. Normative
   ii. Descriptive
   iii. None of the above

3) Decision making alternatives to outcomes are known with a probability under the decision making environment of:
   i. Certainty
   ii. Risk
   iii. Uncertainty
   iv. None of the above

4) Expected value of perfect information (EVPI) and the minimum expected regret (MER) share this relationship:
   i. $EVPI = MER$
   ii. $EVPI > MER$
   iii. $EVPI < MER$
   iv. Cannot be said

5) In a Payoff matrix, the decision alternatives in a decision making situation is under the control of the decision maker:
   i. All the time
   ii. Sometimes
   iii. A few times
   iv. Never
6) Hurwicz decision making criteria can be the same as that of Maximax criteria when degree of optimism value is:
   i. 0  
   ii. 0.5  
   iii. 1  
   iv. Cannot be said

7) Savage decision making criteria relates to selecting the decision alternatives with:
   i. Minimum of maximum regrets  
   ii. Maximum of minimum regrets  
   iii. Minimum of minimum regrets  
   iv. Maximum of maximum regrets

8) Which of the following criterion is not used for decision making under uncertainty?
   i. Maximax  
   ii. Laplace  
   iii. Maximin  
   iv. Minimin

9) The following table indicates the payoffs associated with different decision alternatives.

<table>
<thead>
<tr>
<th></th>
<th>States of Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Demand</td>
</tr>
<tr>
<td>Subcontracting</td>
<td>10</td>
</tr>
<tr>
<td>Overtime</td>
<td>-20</td>
</tr>
<tr>
<td>Construct Facilities</td>
<td>-150</td>
</tr>
</tbody>
</table>

Choose the right decision based on *Maximax Criterion*.
   i. Subcontracting  
   ii. Overtime  
   iii. Construct Facilities
10) Using the table given in question no 9. Choose the right decision based on Hurwicz Criterion if the ‘Degree of Optimism’ is 0.4.

   i. Subcontracting
   ii. Overtime
   iii. Construct Facilities

11) Using the table given in question no 9. Choose the right decision based on Laplace Criterion.

   i. Subcontracting
   ii. Overtime
   iii. Construct Facilities

12) For the payoff matrix given below, which decision will be taken based on Expected Value Approach?

<table>
<thead>
<tr>
<th>Decision</th>
<th>States of Nature</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Demand</td>
<td>Medium Demand</td>
</tr>
<tr>
<td>Probability of Occurrence</td>
<td>0.1</td>
<td>0.5</td>
</tr>
<tr>
<td>Subcontracting</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Overtime</td>
<td>-20</td>
<td>60</td>
</tr>
<tr>
<td>Construct Facilities</td>
<td>-150</td>
<td>20</td>
</tr>
</tbody>
</table>

   i. Overtime
   ii. Construct Facilities
   iii. Subcontracting

13) EVPI is equals to

   i. EREV- ERPI
   ii. ERPI-EREV
   iii. ERPI-best EREV
   iv. Best EREV-ERPI
14) You toss a fair coin three times. Find out the probability of getting three heads, HHH?
   i. 3/2
   ii. 1/2
   iii. 1/8
   iv. None of the Above

15) If A and B are independent events, P(A ∩ B) =
   i. P(A)/P(B)
   ii. P(A)P(B)
   iii. P(B)/P(A)
   iv. P(A)+P(B)

16) Balls numbered 1 to 20 are mixed up and then a ball is drawn at random. What is the probability that the ball drawn has a number which is a multiple of 3 or 5?
   i. 3/20
   ii. 7/20
   iii. 8/20
   iv. 9/20