Assignment 05

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-03-06, 23:59 IST:

1) Select the incorrect statement about AHP

- AHP is a method to derive ratio scales from paired comparisons
- The input can be obtained from actual measurement such as price, weight etc., or from subjective opinion such as satisfaction feelings and preference
- The ratio scales are derived from the principal Eigen value and the consistency index is derived from the principal Eigen vectors
- If we have 3 objects (Apple, Banana and Cherries), we have to make 3 comparisons

No, the answer is incorrect.
Score: 0

Accepted Answers:
If we have 3 objects (Apple, Banana and Cherries), we have to make 3 comparisons

2) Suppose we have 3 by 3 reciprocal matrix from paired comparison of ice creams

<table>
<thead>
<tr>
<th></th>
<th>butterscotch</th>
<th>vanilla</th>
<th>strawberry</th>
</tr>
</thead>
<tbody>
<tr>
<td>butterscotch</td>
<td>1</td>
<td>1/3</td>
<td>5</td>
</tr>
<tr>
<td>vanilla</td>
<td>3</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>strawberry</td>
<td>1/5</td>
<td>1/7</td>
<td>1</td>
</tr>
</tbody>
</table>

A =

Select the option which shows the normalized principal Eigen vector (W) obtained by averaging across the rows:

- 0.2828
- W = 0.6434
- 0.0738
- 0.2998
- W = 0.6534
- 0.0738
3) Suppose we have 3 by 3 reciprocal matrix from paired comparison of ice creams as given by Deepika:

\[
\begin{array}{ccc}
\text{butterscotch} & \text{vanilla} & \text{strawberry} \\
\text{butterscotch} & 1 & 1/3 & 5 \\
\text{vanilla} & 3 & 1 & 7 \\
\text{strawberry} & 1/5 & 1/7 & 1 \\
\end{array}
\]

Then we can say that Deepika likes:
- vanilla 2.27 times more than butterscotch
- vanilla 1.27 times more than butterscotch
- banana 7.72 times more than strawberry
- banana 6.72 times more than strawberry

No, the answer is incorrect.
Score: 0
Accepted Answers:
- vanilla 2.27 times more than butterscotch

4) Suppose we have 3 by 3 reciprocal matrix from paired comparison of movies as given by Anushka:

\[
\begin{array}{ccc}
\text{DDLJ} & \text{KKHH} & \text{KKKG} \\
\text{DDLJ} & 1 & 1/3 & 5 \\
\text{KKHH} & 3 & 1 & 7 \\
\text{KKKG} & 1/5 & 1/7 & 1 \\
\end{array}
\]

Find the Principal Eigen value.
- 3.0967
- 4.0967
- 3.1167
- 4.1167

No, the answer is incorrect.
Score: 0
Accepted Answers:
- 3.0967

5) A comparison matrix A is said to be consistent if \(a_{ij} a_{jk} = a_{ik}\) for all i, j and k.

- TRUE
- FALSE

No, the answer is incorrect.
Score: 0
Accepted Answers:
- TRUE
6) For consistent reciprocal matrix, the largest Eigen value $\lambda_{\text{max}}$ is equal to ______

- the number of comparisons
- sum of the eigen vector
- product of the eigen vector and the sum of columns of the reciprocal matrix
- 1

No, the answer is incorrect.
Score: 0
Accepted Answers:
- the number of comparisons

7) Suppose largest Eigen value = $L_{\text{max}}$, number of comparisons = $n$, then Consistency Index is given as:

- $(L_{\text{max}} - n)/(n-1)$
- $(L_{\text{max}} + n)/(n+1)$
- $(L_{\text{max}} + n)/(n)$
- $(L_{\text{max}} - n)/(n)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
- $(L_{\text{max}} - n)/(n-1)$

8) Choose the incorrect statement about the number of hierarchies that are needed to perform AHP Analysis:

- When working with a single type of stakeholder, one hierarchy may be enough (or 4 if you perform a BOCR analysis)
- When working with different types of stakeholders, a hierarchy for each perspective may be needed
- There are no rules about the number of hierarchies to analyze a problem
- Equal to the number of criteria

No, the answer is incorrect.
Score: 0
Accepted Answers:
- When working with a single type of stakeholder, one hierarchy may be enough (or 4 if you perform BOCR analysis)

9) How many criteria are ideal for the AHP hierarchy?

- 5-9
- 2-10
- 1-5
- 1-10

No, the answer is incorrect.
Score: 0
Accepted Answers:
- 5-9

10) The advantages of AHP are:

- the ability of structuring a problem in a way that is easily manageable
11. Deriving priorities through a rigorous mathematical process using ratio scales 
   allowing measuring and comparison of tangible and intangible elements 
   All of the above
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   the ability of structuring a problem in a way that is easily manageable

12. Consistency ratio of _____ or below constitute acceptable consistency
   0.1
   0.2
   0.3
   0.4
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   0.1

13. AHP is a method which includes many steps: (1) breaking down a complex, unstructured situation into its component parts; (2) arranging these parts, or variables into a hierarchic order; (3) assigning numerical values to subjective judgments on the relative importance of each variable; and (4) synthesizing the judgments to determine which variables have the highest priority and should be acted upon to influence the outcome of the situation. The correct sequence of steps to be followed is:
   1 2 3 4
   3 1 2 4
   1 3 2 4
   3 2 1 4
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   1 2 3 4

14. Choose the correct option for pairwise comparison matrix:
   AHP assigns a 1 to all elements on the diagonal of the pairwise comparison matrix
   the number of entries actually filled in by decision makers is \((n^2 - n)/2\), where \(n\) is the number of elements to be compared
   both \(a\) and \(b\) are TRUE
   none of the above is TRUE
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   AHP assigns a 1 to all elements on the diagonal of the pairwise comparison matrix
The relative priority vector is given as:

<table>
<thead>
<tr>
<th>0.593</th>
</tr>
</thead>
<tbody>
<tr>
<td>W = 0.341</td>
</tr>
<tr>
<td>0.066</td>
</tr>
<tr>
<td>0.693</td>
</tr>
<tr>
<td>W = 0.241</td>
</tr>
<tr>
<td>0.066</td>
</tr>
<tr>
<td>0.493</td>
</tr>
<tr>
<td>W = 0.441</td>
</tr>
<tr>
<td>0.066</td>
</tr>
<tr>
<td>0.593</td>
</tr>
<tr>
<td>W = 0.241</td>
</tr>
<tr>
<td>0.166</td>
</tr>
</tbody>
</table>

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.593
W = 0.341
0.066

15) In functional hierarchies, complex systems are structured into their constituent parts in descending order according to properties (such as size, shape, color, or age). Structural hierarchies decompose complex systems into their constituent parts according to their essential relationships

| TRUE  |
| FALSE |

No, the answer is incorrect.
Score: 0
Accepted Answers:
TRUE