Appendix A

Code for ROC Method
APPENDIX (A)

Code for Rank Order Centroid Method

```cpp
#include <iostream.h>
#include <conio.h>

double roc(int,int);
void main()
{
    int n;
    cout<<"-----Generating rank order centroids----"
    cout<<"\nEnter the number of items: ";
    cin>>n;
    for(int i = 1; i<=n;i++)
    cout<<"\nThe weight of the item"<<i<<"" = ""<<roc(n,i);
    getch();
}

double roc(int n,int i)
{
    double result = 0.0;
    for(int j = i;j<=n;j++)
    result = result + (1.0/j);
    return result/n;
}
```
Outputs of Rank Order Centroid Method

-------Generating rank order centroids-------

Enter the number of items:  4

The weight of the item1 = 0.520833
The weight of the item2 = 0.270833
The weight of the item3 = 0.145833
The weight of the item4 = 0.0625

-------Generating rank order centroids-------

Enter the number of items:  5

The weight of the item1 = 0.456667
The weight of the item2 = 0.256667
The weight of the item3 = 0.156667
The weight of the item4 = 0.09
The weight of the item5 = 0.04
Appendix B

Code for Ratio Method
APPENDIX (B)

Code for Ratio Method

#include <iostream.h>
#include <conio.h>

void main()
{
    clrscr();
    float n, rank[100];
    float n_weights[100];
    float total=0;
    cout<<"------Generating normalized weights using ratio method------";
    cout<<"nEnter the number of items: ";
    cin>>n;
    for(int i = 1; i<n;i++)
    {
        cout<<"nEnter the rank of item"<<i<<": ";
        cin>>rank[i];
        total = total + rank[i];
    }
    for(int j = 1;j<n;j++)
    {
        n_weights[j] = (rank[j]/total);
        cout<<"nThe normalized weight for item"<<j<<" = "<<n_weights[j];
    }
    getch();
}
## Outputs of Ratio Method

<table>
<thead>
<tr>
<th>Item</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>50</td>
</tr>
<tr>
<td>Item 2</td>
<td>40</td>
</tr>
<tr>
<td>Item 3</td>
<td>20</td>
</tr>
<tr>
<td>Item 4</td>
<td>10</td>
</tr>
</tbody>
</table>

The normalized weight for Item 1 = 0.416667
The normalized weight for Item 2 = 0.333333
The normalized weight for Item 3 = 0.166667
The normalized weight for Item 4 = 0.083333

<table>
<thead>
<tr>
<th>Item</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>10</td>
</tr>
<tr>
<td>Item 2</td>
<td>30</td>
</tr>
<tr>
<td>Item 3</td>
<td>40</td>
</tr>
<tr>
<td>Item 4</td>
<td>60</td>
</tr>
<tr>
<td>Item 5</td>
<td>80</td>
</tr>
</tbody>
</table>

The normalized weight for Item 1 = 0.045455
The normalized weight for Item 2 = 0.136364
The normalized weight for Item 3 = 0.181818
The normalized weight for Item 4 = 0.272727
The normalized weight for Item 5 = 0.363636
Appendix C

11-Point Fuzzy Scale

Table C.1: 11-point fuzzy scale

<table>
<thead>
<tr>
<th>Linguistic term</th>
<th>Crisp score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceptionally low (ELL)</td>
<td>0.045</td>
</tr>
<tr>
<td>Extremely low (EL)</td>
<td>0.135</td>
</tr>
<tr>
<td>Very low (VL)</td>
<td>0.255</td>
</tr>
<tr>
<td>Low (L)</td>
<td>0.335</td>
</tr>
<tr>
<td>Below average (BA)</td>
<td>0.410</td>
</tr>
<tr>
<td>Average (A)</td>
<td>0.500</td>
</tr>
<tr>
<td>Above average (AA)</td>
<td>0.590</td>
</tr>
<tr>
<td>High (H)</td>
<td>0.665</td>
</tr>
<tr>
<td>Very high (VH)</td>
<td>0.745</td>
</tr>
<tr>
<td>Extremely high (EH)</td>
<td>0.865</td>
</tr>
<tr>
<td>Exceptionally high (EHH)</td>
<td>0.955</td>
</tr>
</tbody>
</table>
BIOGRAPHY

I (Vandana Bagla) am currently teaching Engineering Mathematics, Operational Research and Numerical Analysis in Maharaja Agrasen Institute of Technology, Rohini, Delhi. After graduating in Computer Science from Delhi University, I completed my Masters in Mathematics and in Philosophy from Maharishi Dayanand Saraswati University, Ajmer.

Have got a number of publications in renowned journals / books, which include:

- Journal of Multi Criteria Decision Analysis, Wiley Publications
- International Journal of Computer Applications
- International Journal of Scientific & Engineering Research
- International Journal of Current Engineering and Technology
- Narosa Publications

Have been involved with and have presented papers in National / International conferences, which include:

- Two weeks workshop under Q.I.P. on financial mathematics organized by A.I.C.T.E. at I.I.T. Delhi held on May 24 - June 04, 2010
- Third International Conference on Computational Intelligence Applications (ICCIA -2012), 11-12 Feb, 2012, Sandip Institute of Technology & Research Centre, Nashik - 4222013.
• National Conference on Business Intelligence and Data Warehousing held on March 17, 2012, Organized by University School of Management Studies, Guru Gobind Singh Indraprastha University, Delhi.

• International Conference on Optimization Modeling and Applications (OPTIMA-2012), Organized by Delhi University, Delhi.

• Two week ISTE workshop on Research Methodologies conducted by IIT Mumbai from 25th June to 4th July, 2012.