**ENG5009 Advanced Control 5**

**Laboratory 1 Worksheet Answer Grid**

**Fuzzy Logic**

1. *Introduction to Fuzzy Logic Toolbox*

|  |  |  |  |
| --- | --- | --- | --- |
| **Defuzzification Method** | **Service** | **Food** | **Tipping Value** |
| Centroid | 5 | 5 | 15 |
| Centroid | 7 | 8 | 20.341 |
| Centroid | 10 | 2 | 16.421 |
| Mean of Maximum | 5 | 5 | 15 |
| Mean of Maximum | 7 | 8 | 24.9 |
| Mean of Maximum | 10 | 2 | 24.9 |
| Bisector | 5 | 5 | 15 |
| Bisector | 7 | 8 | 21.6 |
| Bisector | 10 | 2 | 22.5 |

1. *Integrating the Fuzzy system into the command line*

Defuzzification method used: Centroid

|  |  |  |
| --- | --- | --- |
| **Service** | **Food** | **Value** |
| 5 | 5 | 15 |
| 7 | 8 | 20.341 |
| 10 | 2 | 16.421 |

1. *Further Fuzzy Logic Example*

|  |  |
| --- | --- |
| **Input Temperature, °C** | **Output** |
| 9 | 15.035 |
| 13.1 | 11.222 |
| 26.5 | -9.5957 |
| 20 | -9.4369e-17 |