|  |  |
| --- | --- |
| Module Code | B9AI101\_2122\_TMD2 |
| Module Name | Graph And AI |
| Date | 05/05/2022 |
| Student number | 10600644 |
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Please input your answers below. You may answer the questions in any order but you must ensure they are clearly labelled.

**Question 1.**

**PageRank.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Itr 1 | Itr 2 | Itr 3 | PageRank |
| A | ¼ |  |  |  |
| B | ¼ |  |  |  |
| C | ¼ |  |  |  |
| D | ¼ |  |  |  |

PR(a)=

PR(b)=

PR(c)=

PR(d)=

**Dijskstra’s Shortest Path**

|  |  |  |
| --- | --- | --- |
| Vertex Under Consideration | Shortest Distance from A | Previous Vertex Visited |
| A | 0 |  |
| B | Infi |  |
| C | Infi |  |
| D | Infi |  |
| E | Infi |  |

Visited: None  
To Visit: A,B,C,D,E

|  |  |  |
| --- | --- | --- |
| Vertex Under Consideration | Shortest Distance from B | Previous Vertex Visited |
| A |  |  |
| B |  |  |
| C |  |  |
| D |  |  |
| E |  |  |

Visited: A  
To Visit: B,C,D,E

|  |  |  |
| --- | --- | --- |
| Vertex Under Consideration | Shortest Distance from C | Previous Vertex Visited |
| A |  |  |
| B |  |  |
| C |  |  |
| D |  |  |
| E |  |  |

Visited: A,B  
To Visit: C,D,E

|  |  |  |
| --- | --- | --- |
| Vertex Under Consideration | Shortest Distance from D | Previous Vertex Visited |
| A |  |  |
| B |  |  |
| C |  |  |
| D |  |  |
| E |  |  |

Visited: A,B,C  
To Visit: D,E

|  |  |  |
| --- | --- | --- |
| Vertex Under Consideration | Shortest Distance from E | Previous Vertex Visited |
| A |  |  |
| B |  |  |
| C |  |  |
| D |  |  |
| E |  |  |

Visited: A,B,C,D  
To Visit: E

|  |  |  |
| --- | --- | --- |
| Vertex Under Consideration | Shortest Distance from E | Previous Vertex Visited |
| A |  |  |
| B |  |  |
| C |  |  |
| D |  |  |
| E |  |  |

Visited: A,B,C,D,E  
To Visit:

**Closeness:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| NODE A | 0 |  |  |  |  |
| NODE B |  | 0 |  |  |  |
| NODE C |  |  | 0 |  |  |
| NODE D |  |  |  | 0 |  |
| NODE E |  |  |  |  | 0 |
| SUM TOTAL |  |  |  |  |  |
| N-1/SUM TOTAL |  |  |  |  |  |

**Betweeness:**

**For Node A:**

|  |  |  |  |
| --- | --- | --- | --- |
| Node Connections | Ux,y | Ux,y(v) | Ux,y(v)/Ux,y |
| B,C |  |  |  |
| B,D |  |  |  |
| B,E |  |  |  |
| C,D |  |  |  |
| C,E |  |  |  |
| D,E |  |  |  |

**For Node B:**

|  |  |  |  |
| --- | --- | --- | --- |
| Node Connections | Ux,y | Ux,y(v) | Ux,y(v)/Ux,y |
| A,C |  |  |  |
| D,D |  |  |  |
| A,E |  |  |  |
| C,D |  |  |  |
| C,E |  |  |  |
| D,E |  |  |  |

**For Node C:**

|  |  |  |  |
| --- | --- | --- | --- |
| Node Connections | Ux,y | Ux,y(v) | Ux,y(v)/Ux,y |
| A,B |  |  |  |
| A,D |  |  |  |
| A,E |  |  |  |
| B,D |  |  |  |
| B,E |  |  |  |
| D,E |  |  |  |

**For Node D:**

|  |  |  |  |
| --- | --- | --- | --- |
| Node Connections | Ux,y | Ux,y(v) | Ux,y(v)/Ux,y |
| A,B |  |  |  |
| A,C |  |  |  |
| A,E |  |  |  |
| B,C |  |  |  |
| B,E |  |  |  |
| C,E |  |  |  |

**For Node E:**

|  |  |  |  |
| --- | --- | --- | --- |
| Node Connections | Ux,y | Ux,y(v) | Ux,y(v)/Ux,y |
| A,B |  |  |  |
| A,C |  |  |  |
| A,D |  |  |  |
| B,C |  |  |  |
| B,D |  |  |  |
| C,D |  |  |  |

**Question 2.**

**Question 3.**