**SAINTGITS COLLEGE OF APPLIED SCIENCES**

 **PATHAMUTTOM, KOTTAYAM**

**FIRST INTERNAL EXAMINATION, FEBRUARY 2020**

**Department of Mathematics, Semester II**

**Discrete Mathematics II**

Total : 50 **marks** Time: **2 hours**

**Section A**

*Answer any 5 questions. Each question carries 2 marks.*

1. Define graph

2. State Handshaking Theorem

3. Draw adjacency matrix for the following graph

4. Define graph isomorphism

5. Define complete graph

6. Define path and walk

**Section B**

*Answer any 5 questions. Each question carries 5 marks.*

7. Prove that an undirected graph has an even number of vertices of odd degree

8. Find the in – degree and out – degree of each vertex of the following graph

9. Check whether the following graph is bipartite

10. Define adjacency matrix. Draw graph for the following adjacency matrix

11. Check whether the following graphs are isomorphic

12. Prove that there is a simple path between every pair of distinct vertices of a connected

 undirected graph

**Section C**

*Answer any 1 questions. It carries 15 marks.*

13. Describe graph models with suitable examples

14. Prove that a simple graph is bipartite if and only if it is possible to assign one of two

 different colours to each vertex of the graph so that no two adjacent vertices are

 assigned the same colour

*[Scan QR code for Answer Key]*