**Question Bank**

**Unit -5**

**Discrete Mathematics**

Course Code: BBS01T1009

| Sl No. | Questions | CO | Bloom’s Taxonomy Level | Difficulty Level | Competitive Exam Question Y/N | Area | Topic | Unit | Marks |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1  1 | Define Euler walk. | 5 | K1 | L | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 2 | Define Euler’s path. | 5 | K2 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 3 | Define Euler’s circuit. | 5 | K1 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 4 | Define Hamilton’s walk. | 5 | K1 | L | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 5 | Define Hamilton’s path. | 5 | K2 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 6 | Define Hamilton’s circuit. | 5 | K2 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 7 | **Define Eulerian** cycle. | 5 | K3 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 8 |  | 5 | K3 | H | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 9 |  | 5 | K1 | H | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 10 | Which of the undirected graph in the following figure have an Euler circuit? Of those that do not, which have an Euler Path? | 5 | K2 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 6 |
| 11 | Show that a connected multigraph with at least two vertices has an Euler circuit iff each of its vertices has an even degree. | 5 | K3 | H | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 9 |
| 12 | Which graphs shown in the following figure have an Euler path? Explain it. | 5 | K3 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 6 |
| 13 | Which of the simple graphs in the following Figure have a Hamilton circuit or, if not, a Hamilton path? | 5 | K2 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 6 |
| 14 | Show that  has a Hamilton circuit whenever | 5 | K3 | H | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 6 |
| 15 | Show that a directed multigraph having no isolated vertices has an Euler circuit if and only if the graph is weakly connected and the in-degree and out-degree of each vertex are equal. | 5 | K3 | H | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 9 |
| 16 | Derive an algorithm for constructing Euler circuits in directed graph. | 5 | K3 | H | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 9 |
| 17 | Derive an algorithm for constructing Euler paths in directed graph. | 5 | K3 | H | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 9 |
| 18 |  | 5 | K3 | H | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 6 |
| 19 |  | 5 | K3 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 9 |
| 20 |  | 5 | K1 | M | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 21 |  | 5 | K2 | L | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 2 |
| 22 |  | 5 | K3 | H | N |  | Euler and Hamiltonian paths, Graph coloring | 5 | 6 |
| 23 |  | 5 | K1 | L | N |  | Tree | 5 | 2 |
| 24 |  | 5 | K2 | H | N |  | Tree | 5 | 6 |
| 25 |  | 5 | K3 | H | N |  | Tree | 5 | 6 |
| 26 |  | 5 | K1 | M | N |  | Tree | 5 | 2 |
| 27 |  | 5 | K2 | H | N |  | Tree | 5 | 2 |
| 28 |  | 5 | K2 | M | N |  | Tree | 5 | 2 |
| 29 |  | 5 | K3 | L | N |  | Tree | 5 | 2 |
| 30 | . | 5 | K3 | M | N |  | Tree | 5 | 2 |
| 31 |  | 5 | K3 | H | N |  | Tree | 5 | 2 |
| 32 |  | 5 | K3 | L | N |  | Tree | 5 | 6 |
| 33 |  | 5 | K3 | H | N |  | Tree | 5 | 6 |
| 34 |  | 5 | K3 | M | N |  | Tree | 5 | 6 |
| 35 |  | 5 | K3 | H | N |  | Tree | 5 | 9 |
| 36 |  | 5 | K1 | H | N |  | Tree | 5 | 9 |
| 37 |  | 5 | K1 | M | N |  | Tree | 5 | 9 |
| 38 |  | 5 | K2 | H | N |  | Tree | 5 | 6 |
| 39 |  | 5 | K3 | H | N |  | Tree | 5 | 9 |
| 40 |  | 5 | K2 | H | N |  | Tree | 5 | 6 |
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Signature of Course Coordinator/DC:

Signature of Dean:

IQAC: