

Name :

Tutorial:

Date :

Enrollment No.:

Programme:

1. **Question:** Radius of a graph, denoted by  $\text{rad}(G)$  is defined by:

- $\max e(v)$ :  $v$  belongs to  $V$
- $\min e(v)$ :  $v$  belongs to  $V$
- $\max d(u,v)$ :  $u$  belongs to  $v$ ,  $u$  does not equal to  $v$
- $\min d(u,v)$ :  $u$  belongs to  $v$ ,  $u$  does not equal to  $v$

2. **Question:** A graph with  $n$  vertices will definitely have a parallel edge or self loop if the total number of edges are:

- greater than  $n-1$
- less than  $n(n-1)$
- greater than  $n(n-1)/2$
- less than  $n^2/2$

3. **Question:** In a graph if  $e=(u, v)$  means:

- $u$  is adjacent to  $v$  but  $v$  is not adjacent to  $u$
- $e$  begins at  $u$  and ends at  $v$
- $u$  is processor and  $v$  is successor
- both b and c

4. **Question:** Given below are two statements:

- (a) **Statement I:** In an undirected graph, number of odd degree is even.
- (b) **Statement II:** In an undirected graph, sum of degrees of all vertices is even.

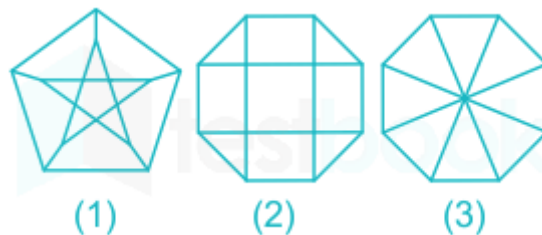
Choose the correct options:

- Statement I and II are True
- Statement I and II are False
- Statement I is True but II is False
- Statement I is False but II is True

5. **Question:** Which of the following statements is incorrect?

- Star graph is a special type of bipartite graph.
- $G$  is a bipartite graph if  $G$  has no cycle of odd length.
- A complete bipartite graph  $K_{m,n}$  has  $m * n$  vertices.
- Maximum number of edges possible in a bipartite graph with  $n$  vertices is  $\lfloor \frac{n^2}{4} \rfloor$

6. **Question:** Which of the following graphs are bipartite?



- 1
- 2

- 1 and 3
- 1, 2, 3

7. **Question:** Given  $G$  is a bipartite graph and the bipartitions of this graph are  $U$  and  $V$  respectively. What is the relation between them?

- Number of vertices in  $U$  = Number of vertices in  $V$
- Sum of degrees of vertices in  $U$  = Sum of degrees of vertices in  $V$
- Number of vertices in  $U >$  Number of vertices in  $V$
- Nothing can be said

8. **Question:** Incidence matrix and Adjacency matrix of a graph will always have same dimension?

- True
- False

9. **Question:** The column sum in an incidence matrix for a directed graph having no self loop is:

- 0
- 1
- 2
- equal to the number of edges

10. **Question:** The graph with their incidence matrices given are Isomorphic:

	e1	e2	e3	e4	e5	e6
v1	1	0	0	0	0	0
v2	1	1	0	0	0	1
v3	0	1	1	0	1	0
v4	0	0	1	1	0	0
v5	0	0	0	1	1	1

	e1	e2	e3	e4	e5	e6
v1	0	0	1	0	0	0
v2	1	0	1	0	1	0
v3	1	1	0	1	0	0
v4	0	1	0	0	0	1
v5	0	0	0	1	1	1

- True
- False