



CS & IT ENGINEERING

Graph Theory

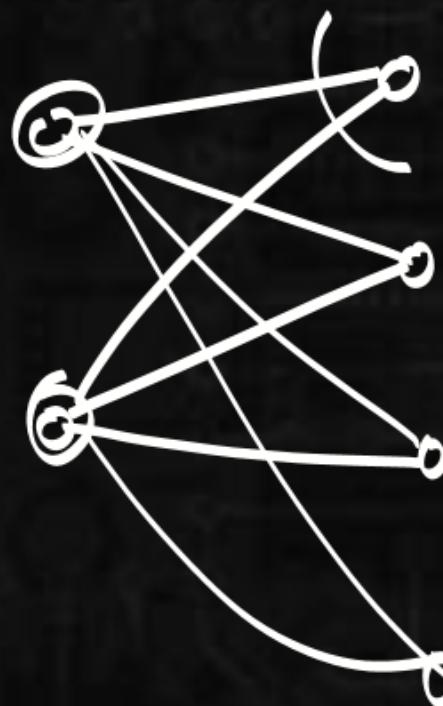
DPP 07
Discussion Notes

[NAT]

1. If G is a bipartite graph with 9 vertices and maximum number of edges, then vertex connectivity of $G = \underline{4}$.

$$K(K_{m,n}) = \min(m,n) \quad |K_{4,5}$$

$$\lambda(K_{m,n}) = \min(m,n)$$

 $K_{2,4}$ 

$$K(K_{4,5}) = \min(4,5)$$

$$= 4$$

[MSQ]

2. Which of the following options is/are correct?

- (a) A graph G is Euler iff it is connected and $\forall v \in G$ degree (v) = even. (τ)
- (b) A K - regular graph is Euler iff K is even. (F)
- (c) A wheel graph (w_n) can have Euler circuit. (F)
- (d) A graph will contain an Euler path if it contains at most two vertices of odd degree. (τ)

[MCQ]

3. A forest is disconnected graph in which each component is a tree. Let F be a forest on 80 vertices with 21 connected components. Then number of edges in G is ____.

- (a) 58
- (b) 60
- (c) 59
- (d) 101

$$n = 80$$

$$k = 21$$

$$e = n - k,$$

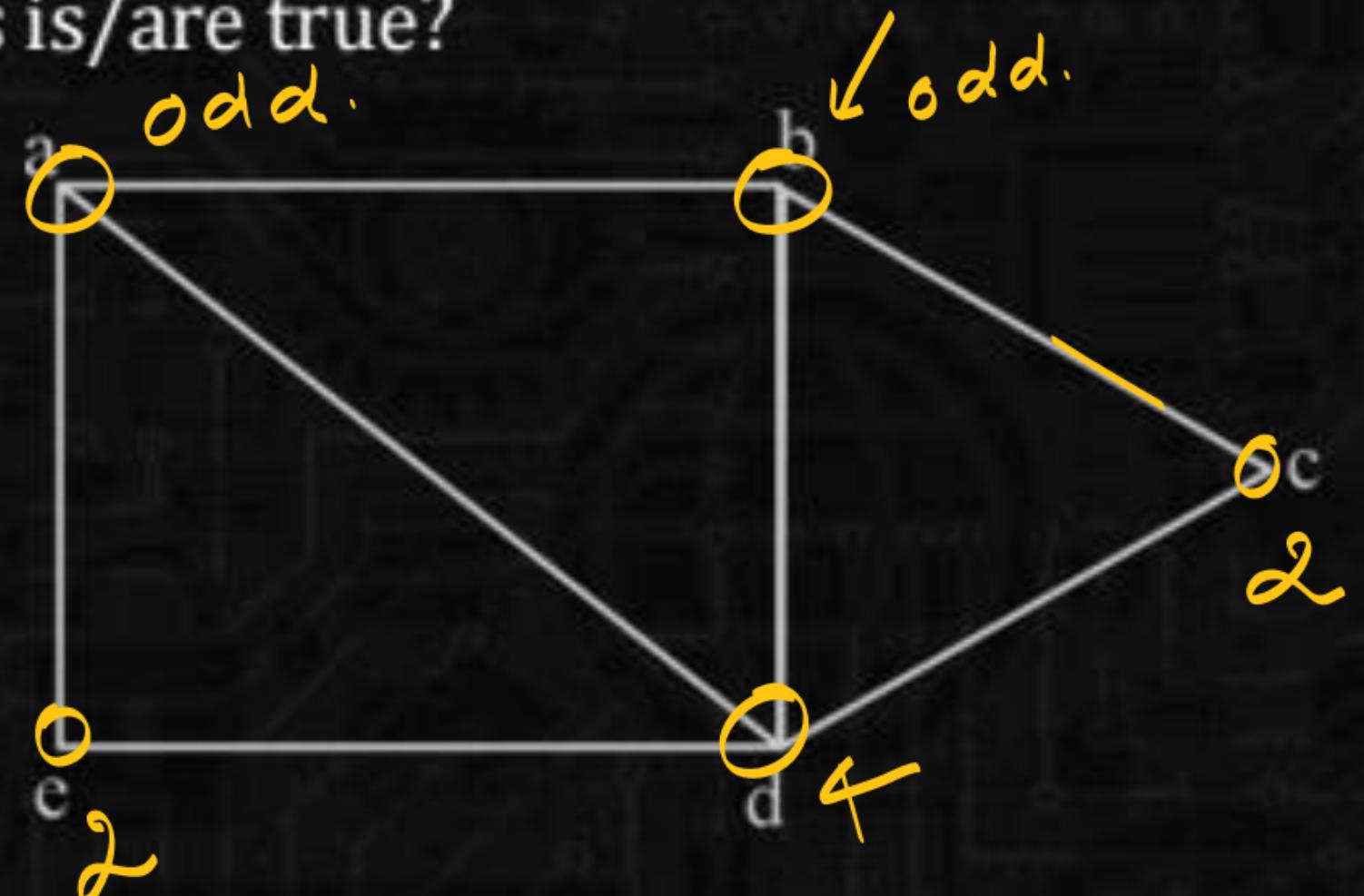
$$e = 80 - 21$$

$$= 59.$$

[MCQ]

4. For the graph shown below

Which of the following statements is/are true?

 S_1 : Euler path exists ✓ S_2 : Euler circuit exists ✗ S_3 : Hamiltonian cycle exists ✓ S_4 : Hamiltonian path exists ✓(a) S_1, S_3 and S_4 ✓(b) S_1, S_2 and S_3 (c) S_1, S_2 and S_4 (d) S_2, S_3 and S_4 

[MCQ]

5. Which of the following is Euler Graph?

(a) K_{51} ✓(b) K_{50} (c) C_{60} ✗(d) 11-regular ✗. $K_{51}.$ ✓ $50, 50, 50 \dots -$ K_{50} $49, 49, 49 \dots .$ $K_{60} \quad 59, 59, 59 \dots -$ $\frac{C_{60} \quad 2 \quad 2 \quad 2}{C_{60} \quad 57 \quad 57 \quad 57 \dots }$

[MCQ]

6. If G is not a simple connected graph with n vertices then maximum number of edges possible in G is

(a) $\frac{n(n-2)}{2}$

(b) $\frac{(n-1)n}{2}$

(c) $\frac{(n-1)(n-2)}{2}$

(d) $\frac{(n-1)(n-2)}{4}$

$$e = \frac{(n-k)(n-k+1)}{2}$$

$$k=2 \quad e = \frac{(n-2)(n-1)}{2} \checkmark$$

$$k=3 \quad e = \frac{(n-3)(n-2)}{2}$$

$$k=4$$



THANK YOU GW
SOLDIERS !