CS & IT ENGINEERING

Graph Theory

DPP 11

Discussion Notes

[MCQ] msq.

1. Consider the given graph below.
Which of the following is/are True?

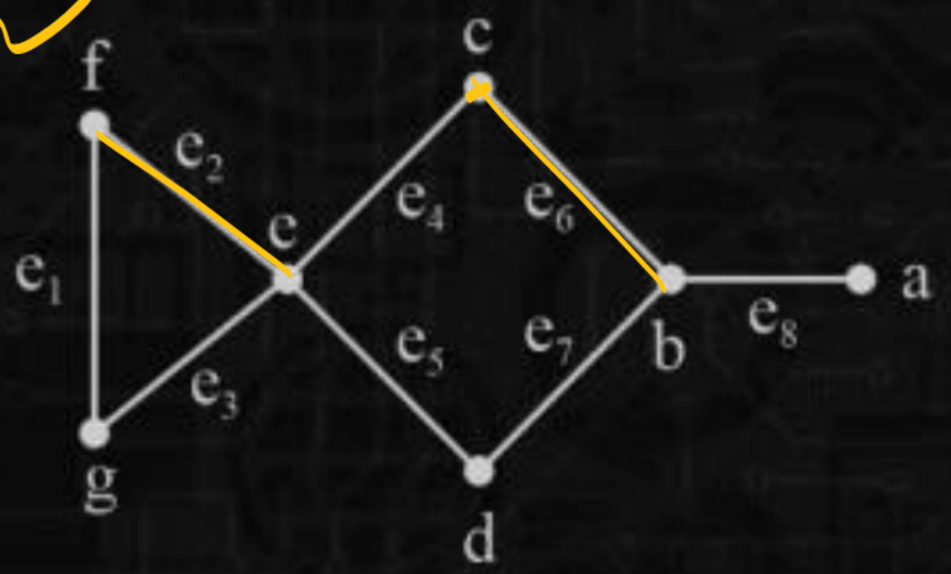
(a) Matching = $\{e_1, e_4, e_7\}$ and Matching No.= 4 ✗

(b) Matching = $\{e_1, e_4\}$ and Matching No. = 3 ✓

(c) Matching = $\{e_1, e_4, e_8\}$ and Matching No. = 3 ✓

(d) Matching = $\{e_2, e_6\}$ and Matching No. = 3 ✓

(b, c, d)



[MCQ]

2. Find total number of perfect matching in K_8?

(a) 100

(b) 102

(c) 105 ✓

(d) 107

$$\frac{(2n)!}{2^n \cdot n!}$$

$$\frac{(2\cdot 4)!}{2^4 \cdot 4!}$$

$$= \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4!}{2 \cdot 2 \cdot 2 \cdot 2 \cdot 4!}$$

$$= 7 \times 15$$

$$7 \times (10+5)$$

$$\begin{array}{r} 70 \\ 35 \\ \hline 105 \end{array}$$

[MCQ]

3. Which of the following is perfect matching for the graph shown below.

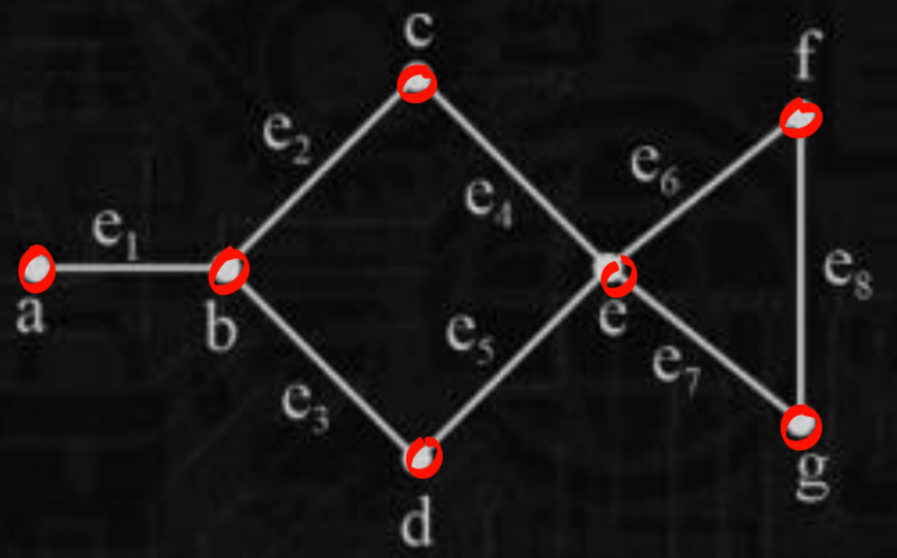
(a) $\{e_1, e_4, e_8\}$

(b) $\{e_1, e_5, e_8\}$

(c) $\{e_1, e_3, e_4, e_8\}$

(d) None of these ✓

n = 7.



P.M → Even.

¬ Even → ¬ P.M.

odd → not P.M.

[MCQ]

4. Consider a 3-regular graph with number of vertices 10. How many faces in planar embedding for connected planar?

(a) 5 (b) 7

(c) 9 (d) 10

$n = 10$

$\Sigma d(v_i) = 2e$

$3 \times 10 = 2e$

$e = 15$

$n - e + f = 2$

$10 - 15 + f = 2$

$f = 2 + 5 = 7$

[NAT]

5. Consider a graph with 10 vertices, 15 edges and 3 components then how many closed faces are there ___?

8

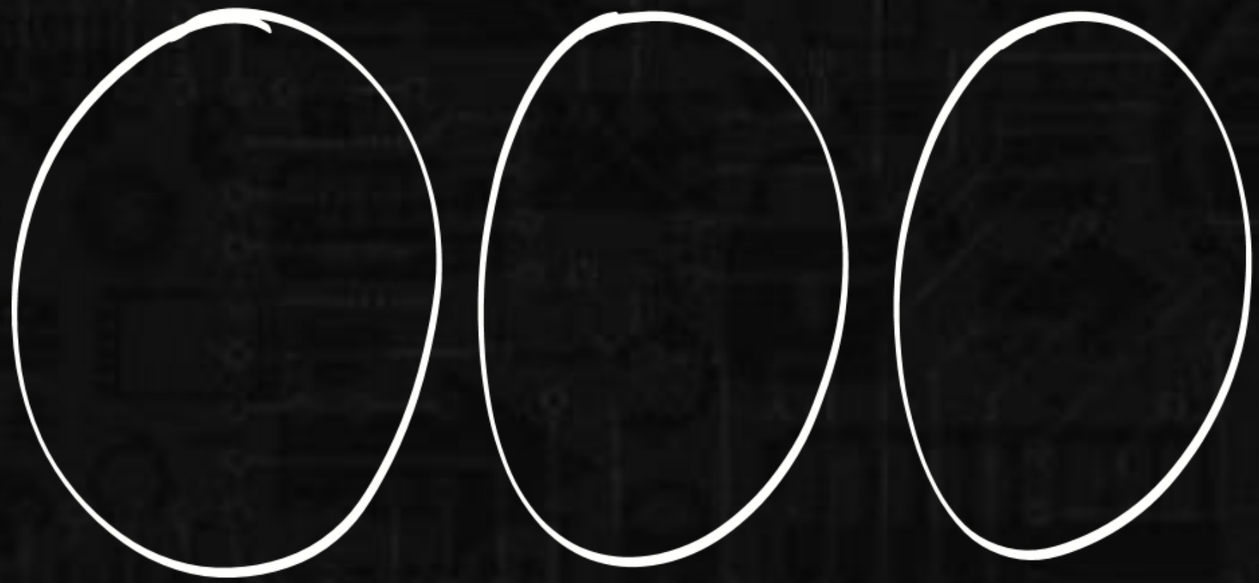
$n = 10 \quad e = 15 \quad k = 3.$

$n - e + f = k + 1.$

$10 - 15 + f = 3 + 1$

$-5 + f = 4$

$f = 9$




THANK YOU GW
SOLDIERS !