

# CS & IT ENGINEERING

## Graph Theory

Discrete Mathematics



**DPP 09**

**Discussion notes**



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# TOPICS TO BE COVERED

01 Question

02 Discussion



Q.1

If  $G$  is a bipartite graph with 6 vertices and 9 edges then the chromatic number of  $\bar{G} = \underline{\quad 3 \quad}$ .

[NAT]

$$G \quad \left\lfloor \frac{n^2}{4} \right\rfloor$$

$$n = 6 \quad \underline{e = 9}$$

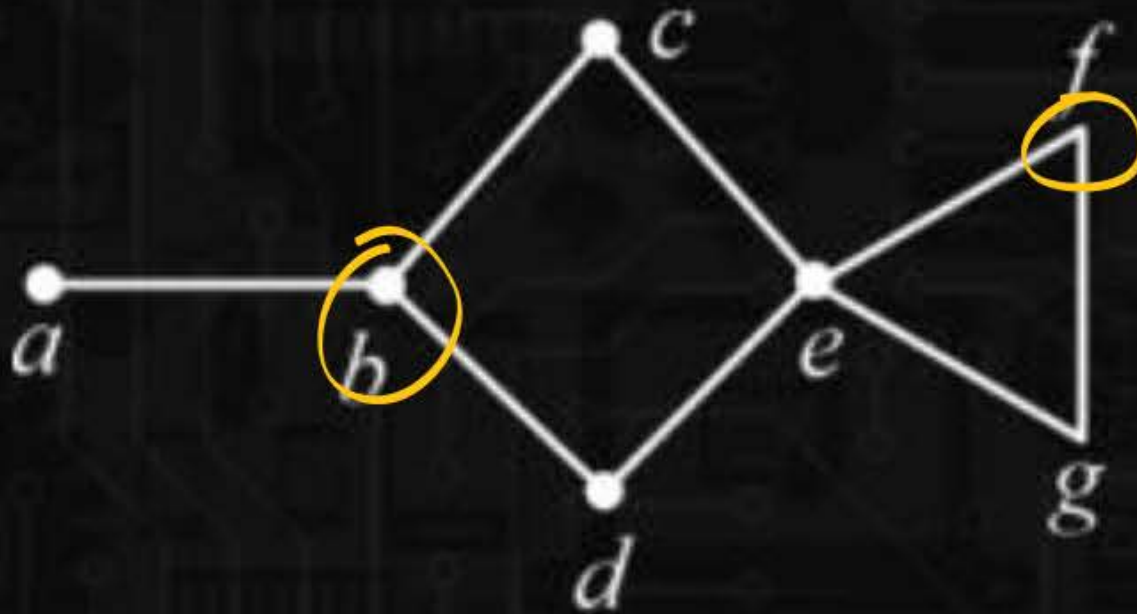
$$K_{3,3}$$

$$\chi(\bar{G}) = 3$$



Q.2

Consider the graph shown below.



(a, c)

Which of the following option is correct?

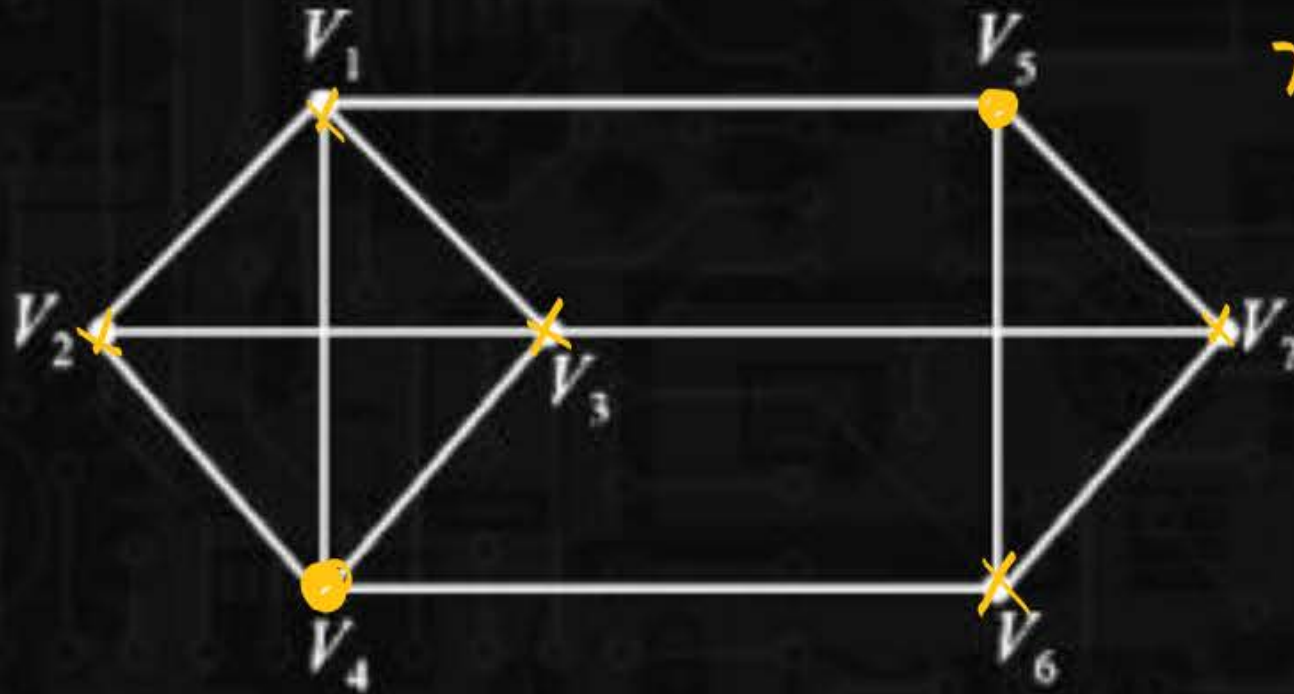
- A. Dominating set = {e, b} and Domination no = 2 (T)
- B. Dominating set = {a, c, d, f} and Domination no = 4 (F)
- C. Dominating set = {b, f} and Domination no = 2 (T)
- D. None of these



Q.3

For the graph shown below.

[NAT] 



$$\begin{aligned}x &= 4 \\y &= 2\end{aligned}$$

Ans : 6.

Assume  $x$  is the chromatic number of the graph and  $y$  is the domination number then find  $x + y$ ?

Q.4

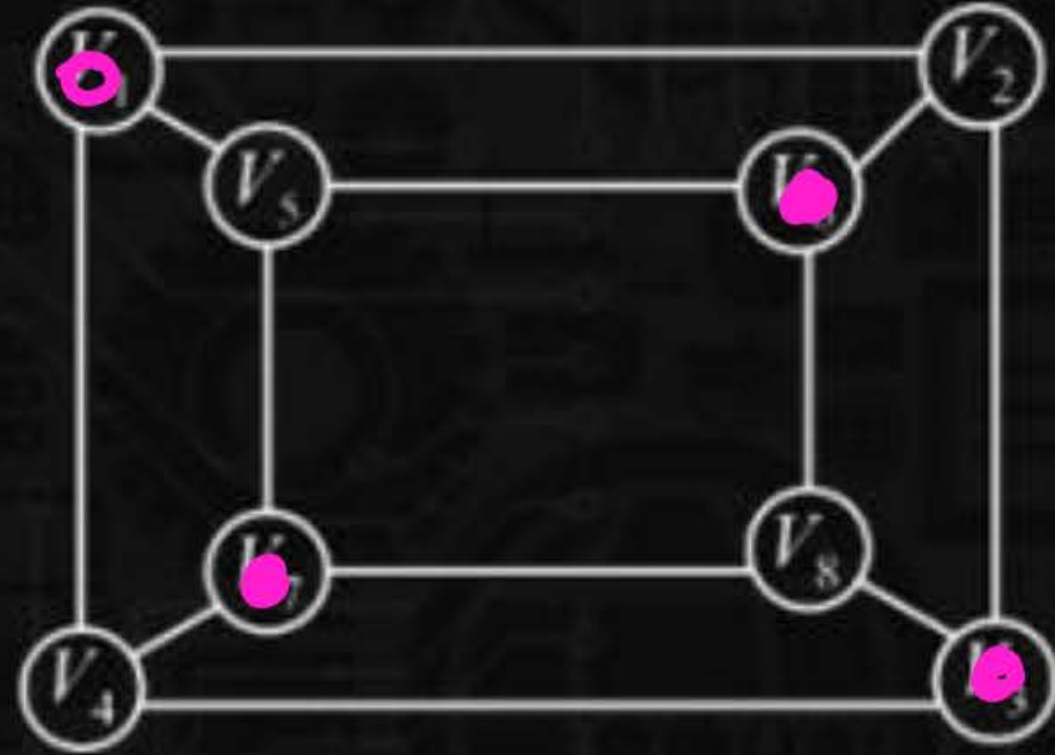
Which of the following is/are an independent set for the graph shown below?

[MCQ]



- A.  $\{V_1, V_8, V_2\}$  ✗
- B.  $\{V_1, V_8\}$  ✓
- C.  $\{V_2, V_4, V_5, V_8\}$  ✓
- D.  $\{V_1, V_3, V_6, V_7\}$  ✓

(b, c, d)





Q.5

[MCQ]



Consider the given graph  $G$ .

Which of the following option is correct?

$S_1$  : The chromatic number for the given graph is 3. ( $\tau$ )

$S_2$  : The independence number of the graph is 4. ( $\tau$ )

A.

$S_1$  only

B.

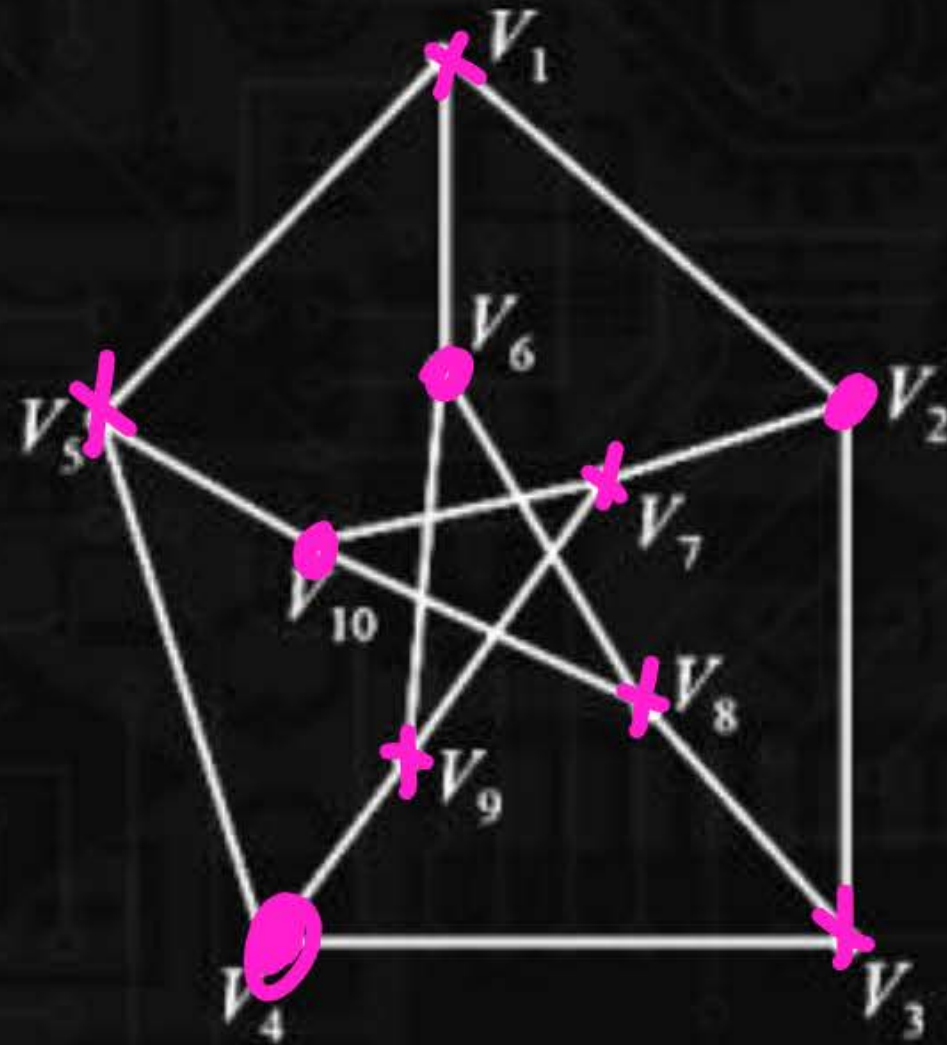
$S_2$  only

C.

Both  $S_1$  and  $S_2$  ✓

D.

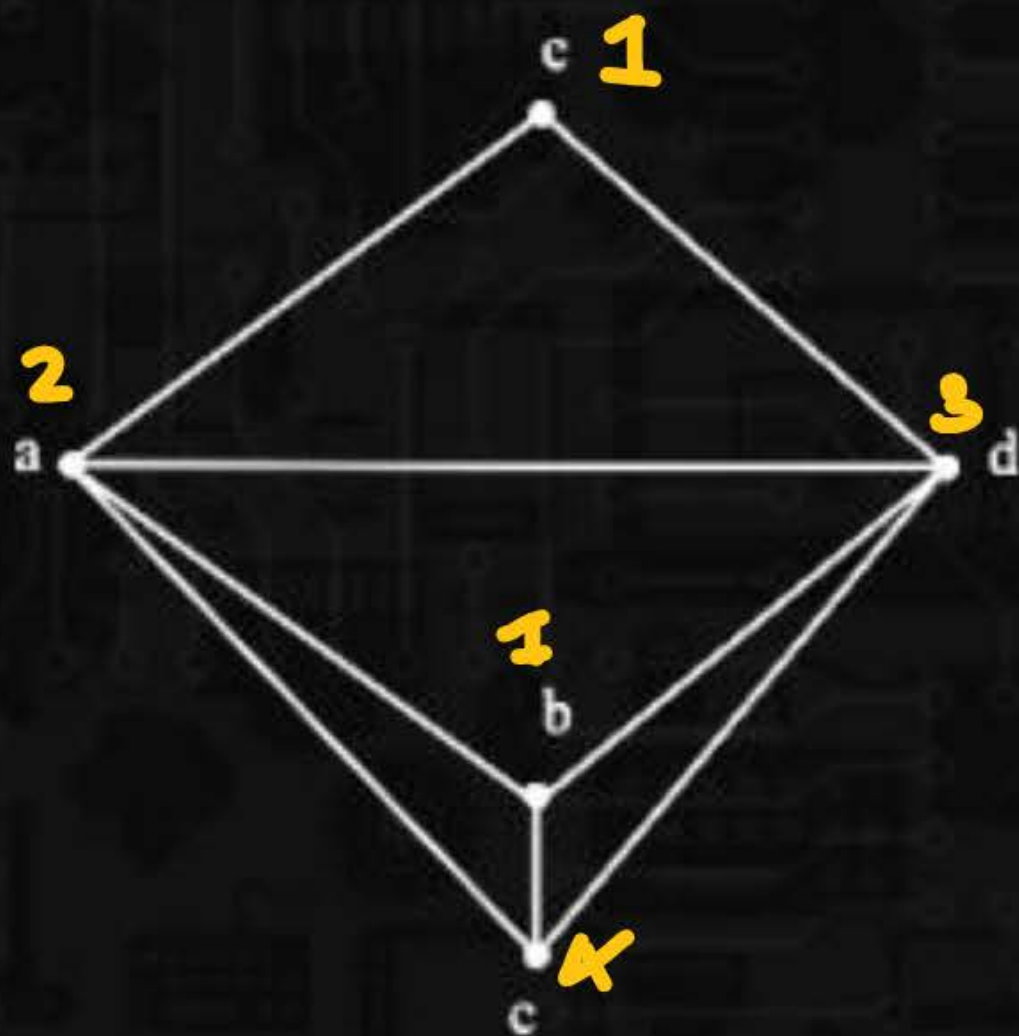
Neither  $S_1$  nor  $S_2$



Q.6

For the graph shown below, the chromatic number is \_\_\_\_.

[NAT]



$$\chi(G) = 4.$$



