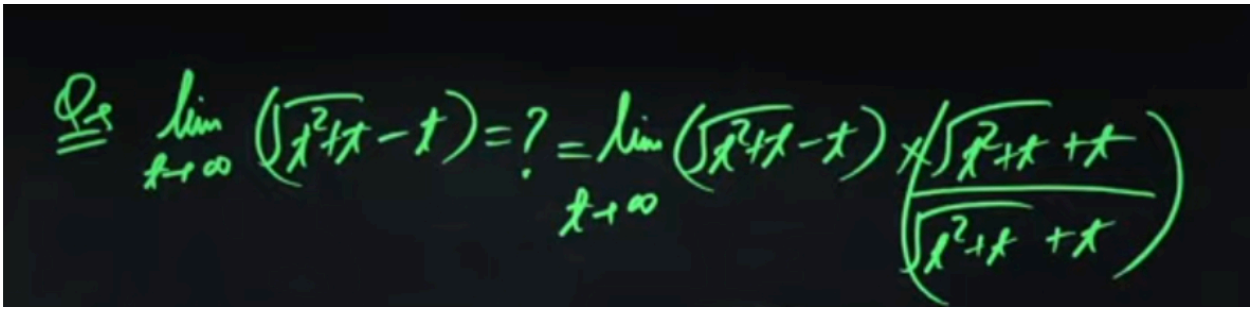
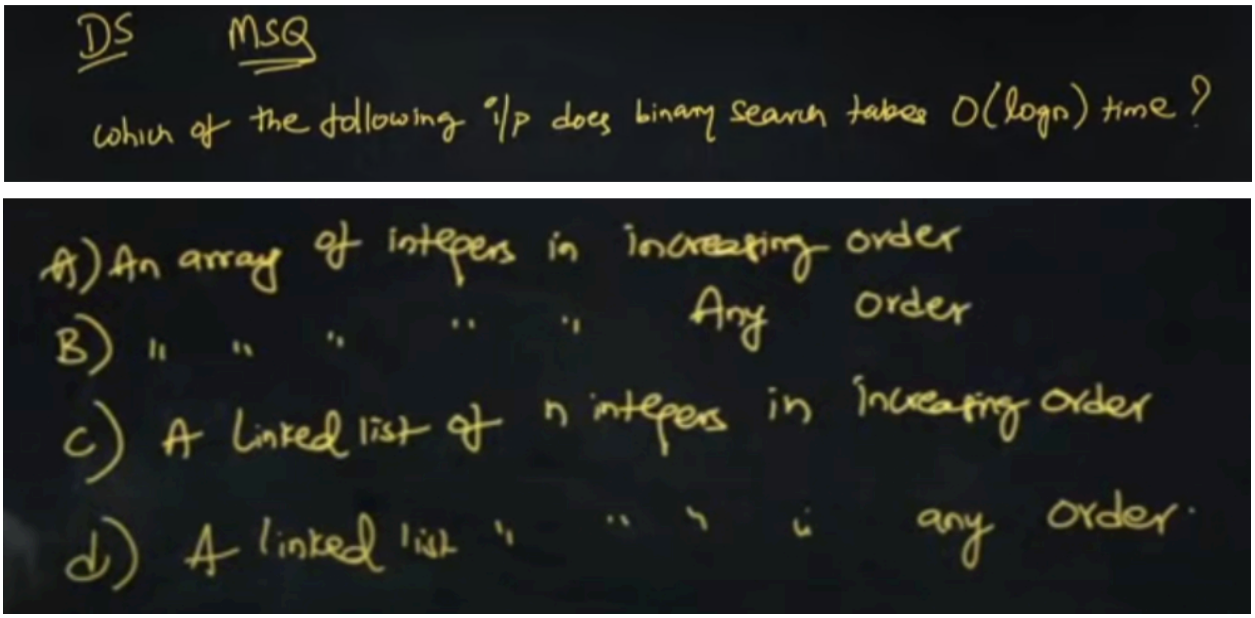
GATE 2025 DA Feb 15 Memory Based Questions

1. When will be the case of Binary Search Worst Case?
2. 

3. X and Y → Random Variable
   E(X/Y) → Conditional Expected Value of X/Y
   E(E(X/Y)) = ?

4. Hash table [0…..9]
   h(x)= 3x%10
   Keys given 1,4,5,6,14,15
   Using Linear Probing, in which index will keys 14 and 15 be stored?

5. Consider the following declaration of
   A = [1,2,3] and B = [4,5,6]
   Which of the following statements result in A = [1,2,3,4,5,6]?

6. 

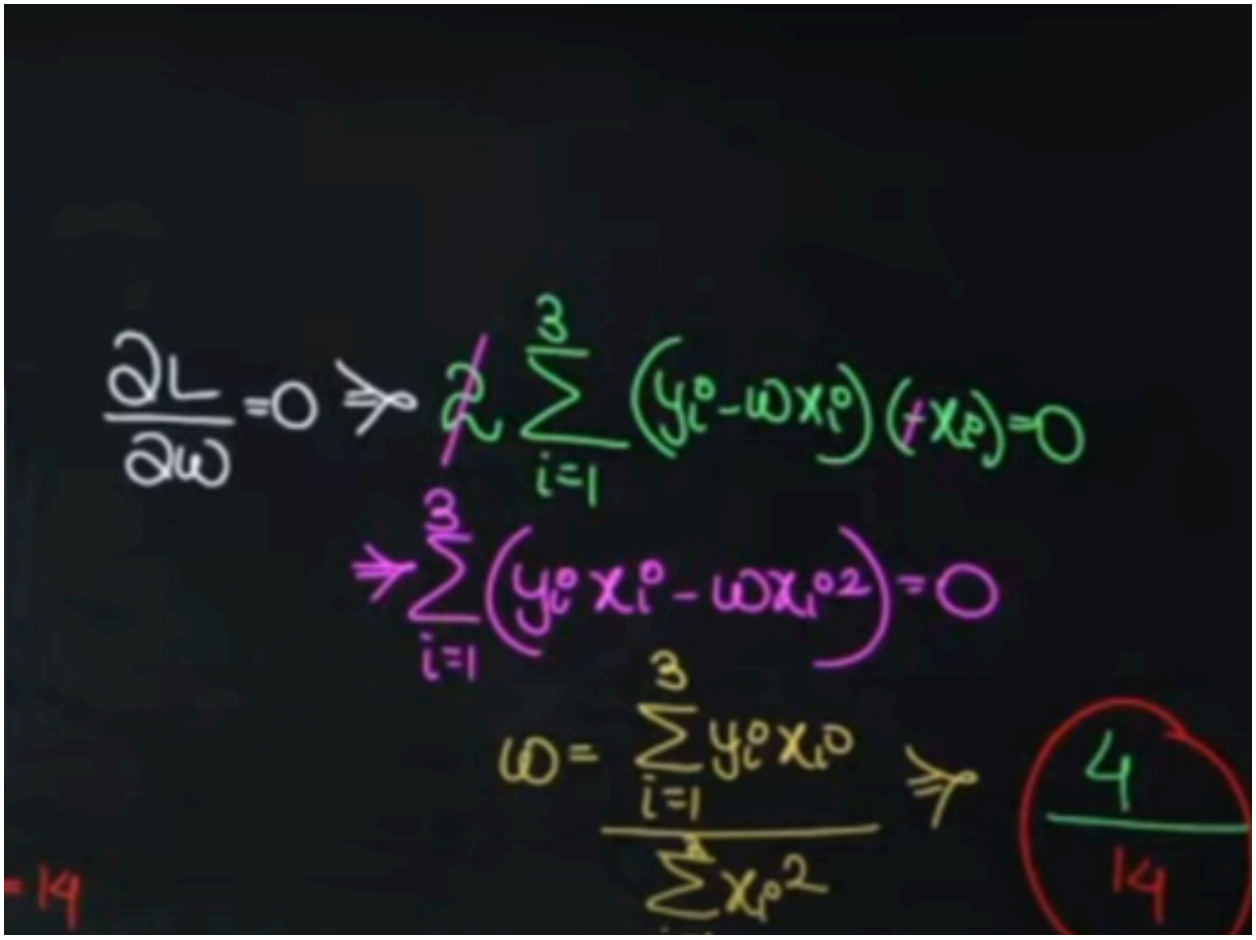
7. Suppose that Insertion Sort is applied to the array [1,3,5,7,9,11,x,15,13], and it takes exactly two swaps to sort the array. Select all possible values of x.

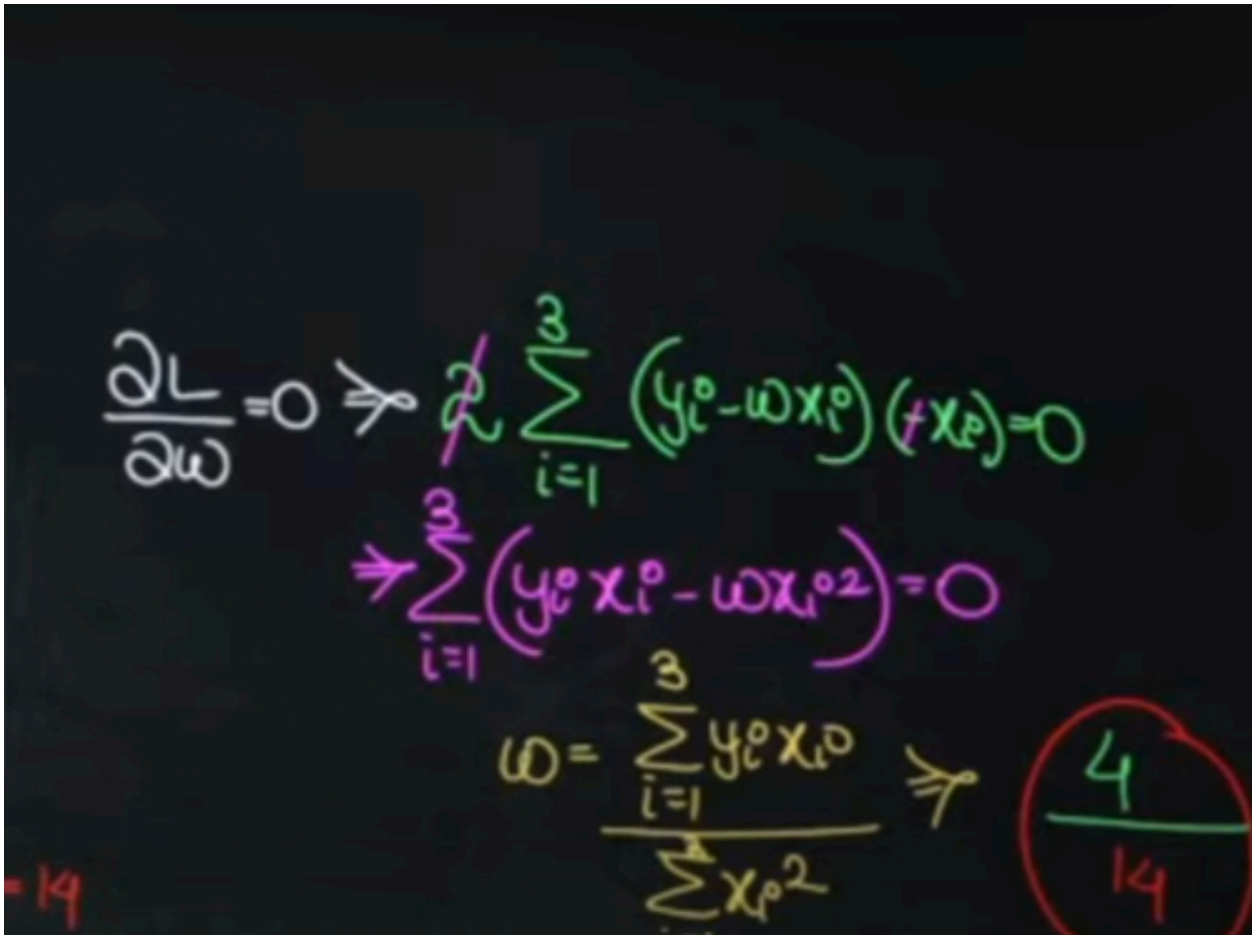
(a) 14
(b) 16
(c) 12
(d) 10

8. Which of the following is or are correct?

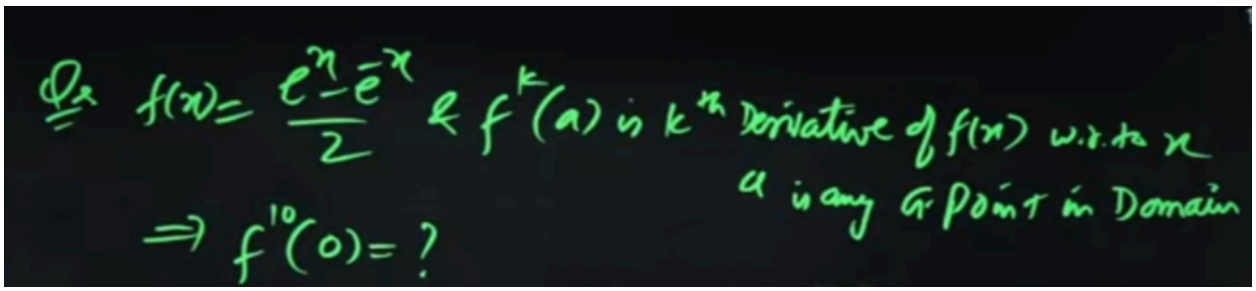
(a) VE is an approximate influence algo
(b) Gibbs is an exact influence sampling
(c) Reject is an exact influence sampling
(d) VE is used to cond. problem

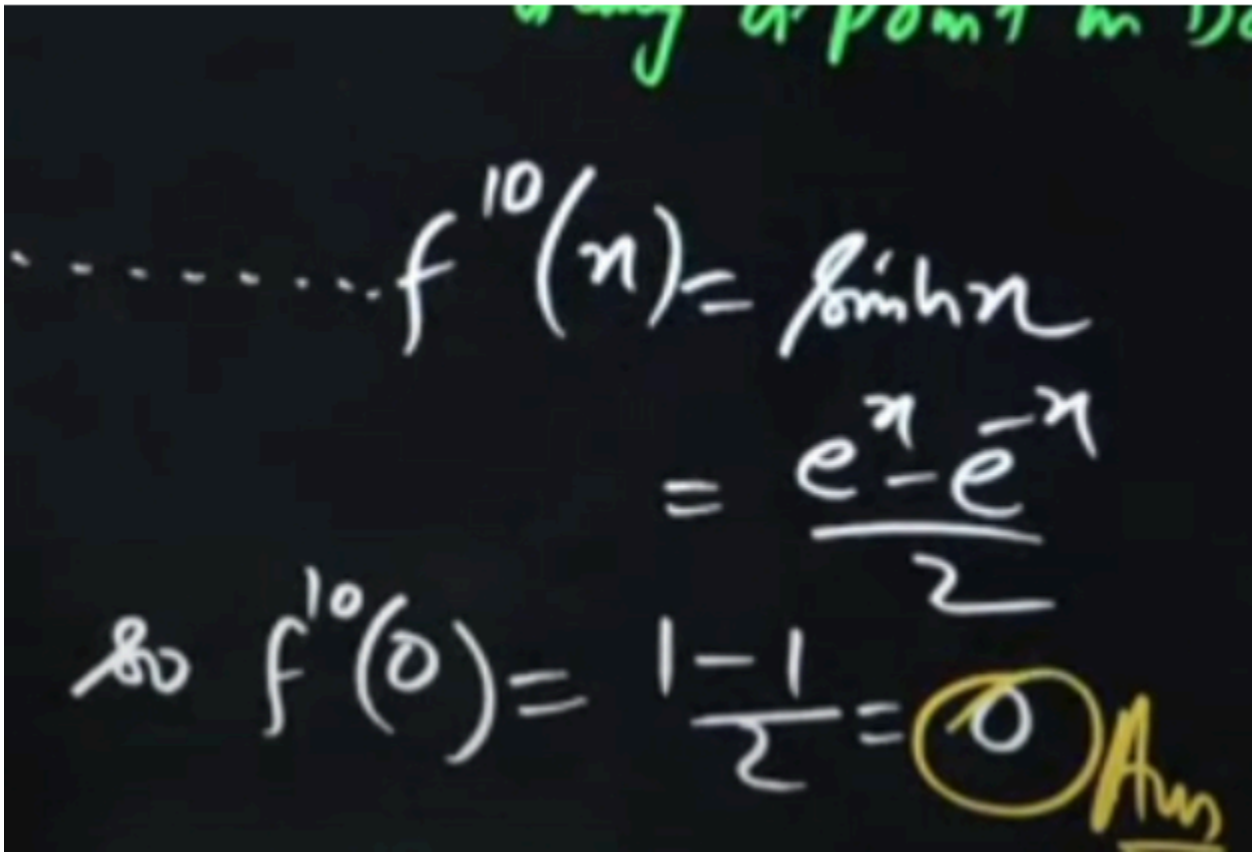
9.


$\frac{\partial L}{\partial w} = 0 \Rightarrow 2 \sum_{i=1}^{3} (y_i^0 - w x_i^0)(-x_i^0) = 0$
$\Rightarrow \sum_{i=1}^{3} (y_i^0 x_i^0 - w x_i^{0 2}) = 0$
$w = \frac{\sum_{i=1}^{3} y_i^0 x_i^0}{\sum x_i^{0 2}} \Rightarrow \frac{4}{14}$
14

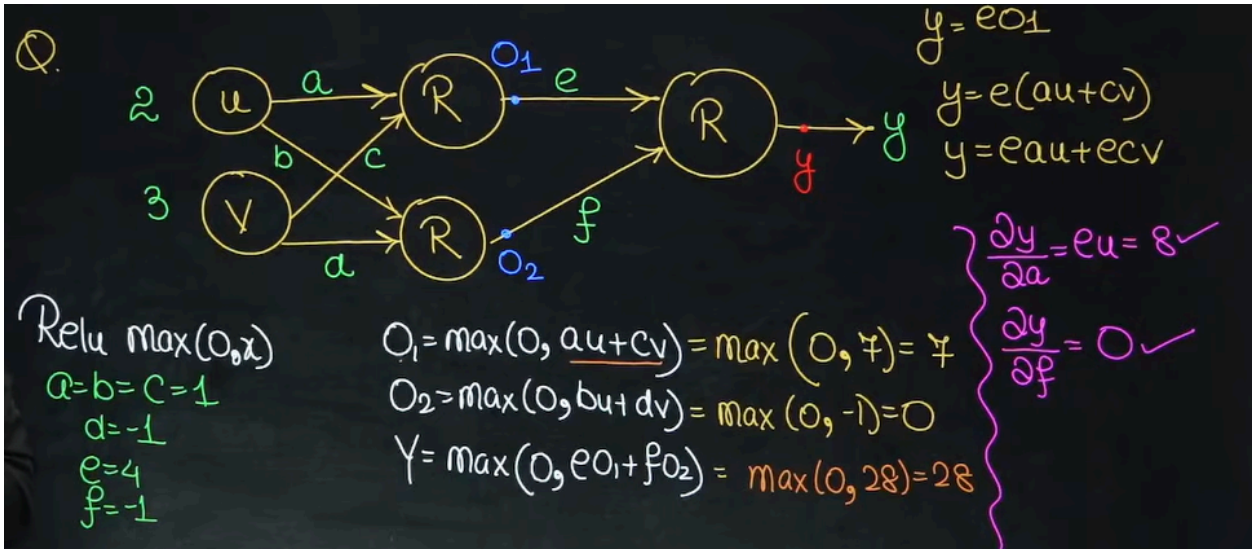

$\frac{\partial L}{\partial w} = 0 \Rightarrow 2\sum_{i=1}^{3}(y_i^0 - wx_i^0)(-x_i^0) = 0$
$\Rightarrow \sum_{i=1}^{3}(y_i^0 x_i^0 - wx_i^{02}) = 0$
$w = \frac{\sum_{i=1}^{3} y_i^0 x_i^0}{\sum x_i^{02}}$
$\frac{4}{14}$

10.

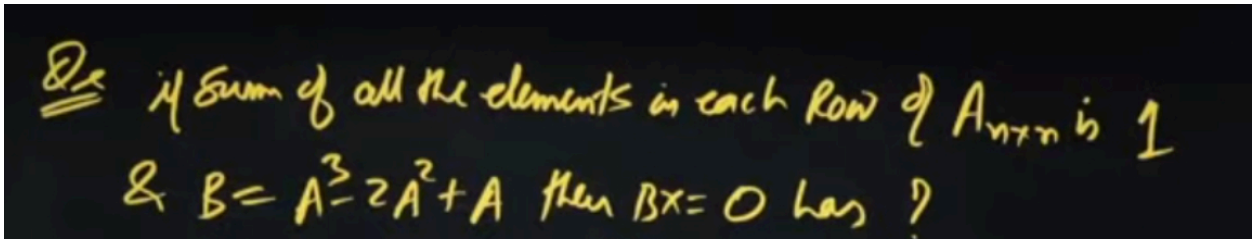

Q. $f(x) = \frac{e^x - e^{-x}}{2}$ & $f^k(a)$ is k^{th} Derivative of $f(x)$ w.r.t. to x
a is any a Point in Domain
$\Rightarrow f^{10}(0) = ?$

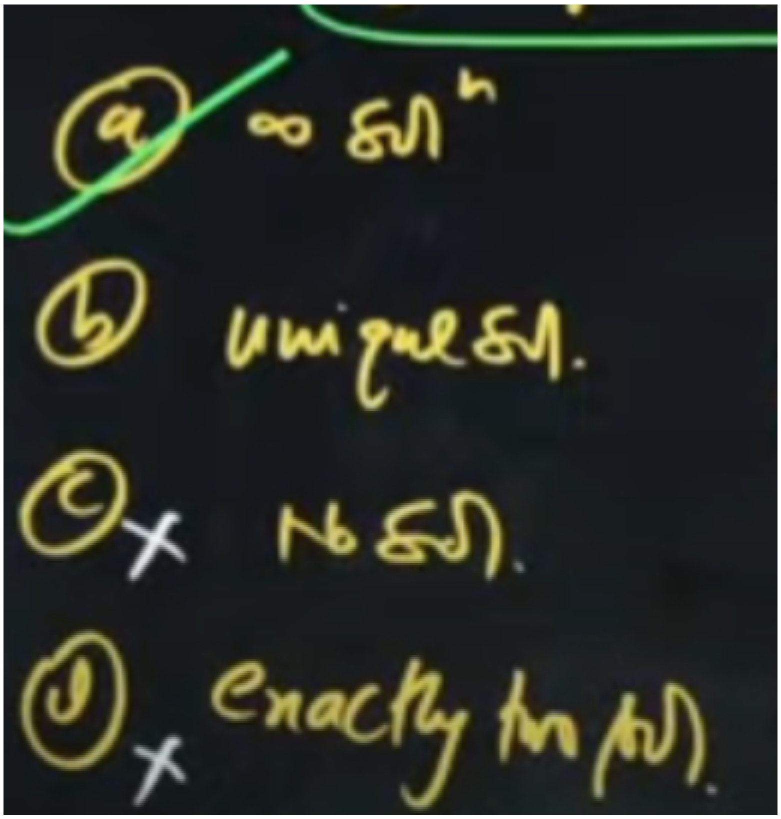

$f^{10}(x) = \sinh x$
$= \frac{e^x - e^{-x}}{2}$
$f^{10}(0) = \frac{1-1}{2} = 0$ Ans

11.

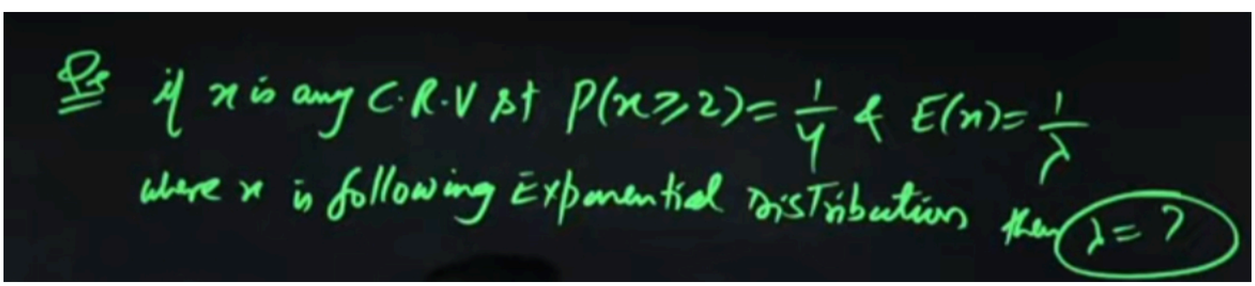

Q.
2
3
u
v
a
b
c
d
R
R
R
O_1
O_2
e
f
y
$y = eO_1$
$y = e(au+cv)$
$y = eau+ecv$
Relu max(0,x)
a=b=c=1
d=-1
e=4
f=-1
$O_1 = max(0, au+cv) = max(0, 7) = 7$
$O_2 = max(0, bu+dv) = max(0, -1) = 0$
$Y = max(0, eO_1+fO_2) = max(0, 28) = 28$
$\frac{\partial y}{\partial a} = eu = 8$
$\frac{\partial y}{\partial f} = 0$

12.

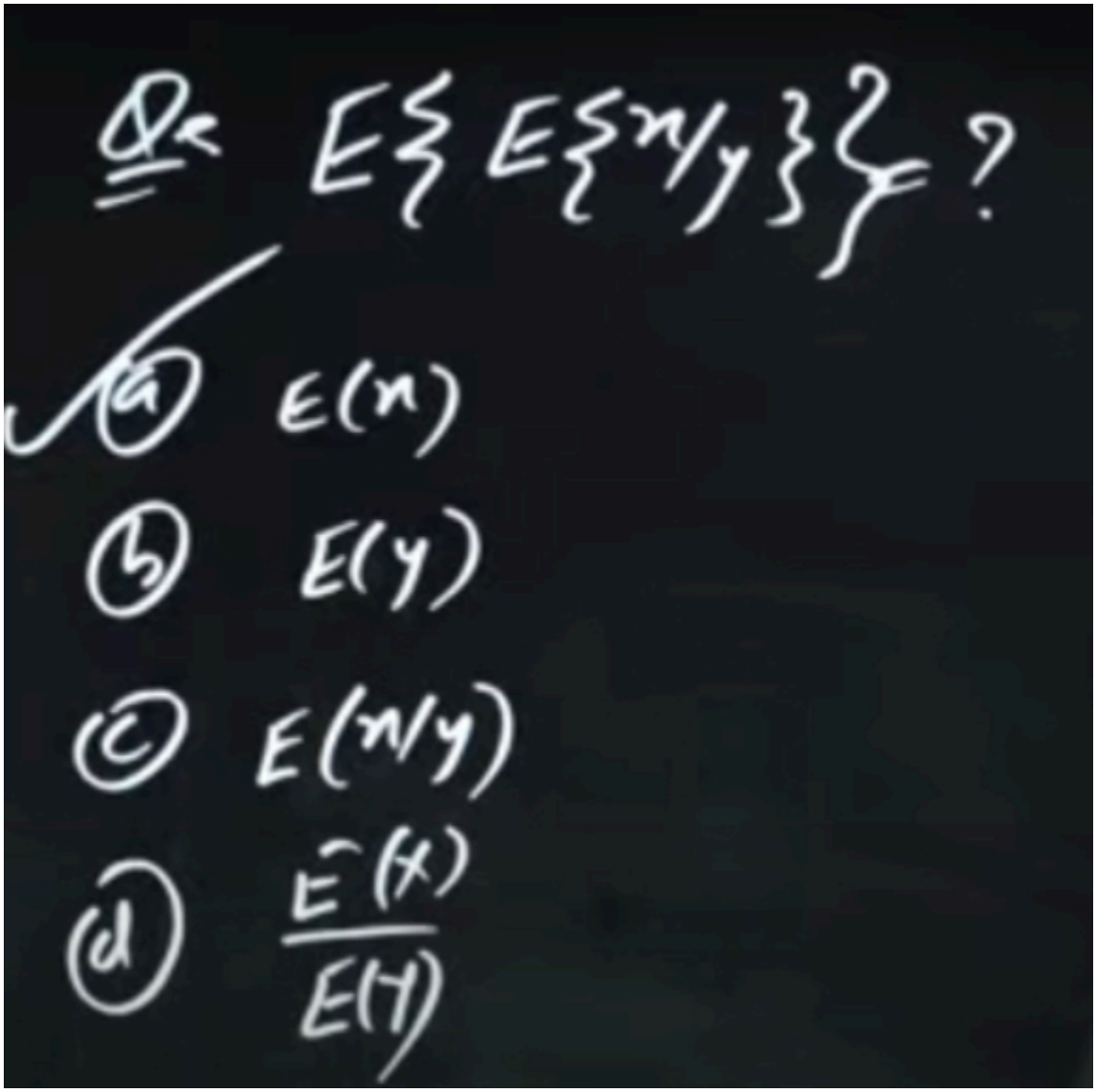

Q. if Sum of all the elements in each Row of $A_{n\times n}$ is 1
& $B = A^3 - 2A^2 + A$ then $BX = 0$ has ?


(a) ∞ soln
(b) unique soln.
(c) No soln.
(d) exactly two soln.

13.


Q. if x is any C.R.V st P(x≥2)= 1/4 & E(x)= 1/λ
where x is following Exponential Distribution then λ=?

14.



15.