Unit 5 - Week 3

Assignment 3

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-18, 23:59 IST.

1) Consider that a piece of zinc and gold of equal area are coupled together and immersed in a deaerated acidic solution of pH 2. The Anodic and cathodic Tafel slopes are 0.15 V/decade of current density. Based on the data given below, the value of E_{corr} (V) without coupling gold with respect to standard hydrogen electrode will be; *0 points*

(Given; $i^{H_2}_{o(Zn)} = 10^{-12}$ A/cm^2

$i^{H_2}_{o(Au)} = 10^{-6}$ A/cm^2

$i^{Zn}_{o(Zn)} = 10^{-10}$ A/cm^2)

i_{corr} (without coupling gold) = 10^{-6} A/cm^2

○ – (0.12 to 0.20)
○ – (0.68 to 0.76)
○ (0.61 to 0.68)
○ – (1.02 to 1.06)

No, the answer is incorrect.
Score: 0

Accepted Answers:
– (0.68 to 0.76)

2) Based on the data provided in Q1, the value of E^{Zn}_{Eq} (V) with respect to standard hydrogen electrode will be; *0 points*

○ – (0.78 to 0.86)
○ – (0.24 to 0.30)
○ (0.06 to 0.14)
○ – (1.08 to 1.16)

No, the answer is incorrect.
Score: 0

Accepted Answers:
– (1.08 to 1.16)

3) Based on the data provided in Q1, the value of $E_{corr\ (Au\text{-}Zn)}$ (V) (with coupling of gold) with respect to standard hydrogen electrode will be; *0 points*

○ – (0.38 to 0.45)
○ – (0.12 to 0.20)
○ – (1.06 to 1.14)
○ – (0.74 to 0.86)

No, the answer is incorrect.
Score: 0

Accepted Answers:
– (0.38 to 0.45)

4) Based on the data provided in Q1, the value of $i_{corr\ (Au\text{-}Zn)}$ (A/cm^2) (with coupling of gold) will be; *0 points*

○ ~ 10^{-3}
○ ~10^{-6}
○ ~10^{-8}
○ ~10^{-10}

No, the answer is incorrect.
Score: 0

Accepted Answers:
~ 10^{-3}

5) Consider that two different metals A and B having cross sectional area 1 cm^2 and 100 cm^2, respectively, are coupled together and immersed in a deaerated acidic solution of pH 2. Metal A is more active than metal B. The Anodic and cathodic Tafel slopes are 0.1 V/decade of current density. Based on the data given below, the value of $E_{corr\ (A\text{-}B)}$ (V) with respect to standard hydrogen electrode will be; *1 point*

(Given; $i^{H_2}_{o(A)} = 10^{-8}$ A/cm^2

$i^{H_2}_{o(B)} = 10^{-5}$ A/cm^2

$i^{A}_{o(A)} = 10^{-8}$ A/cm^2

$E^{A}_{Eq} = -0.95$ V)

○ – (0.78 to 0.84)
○ – (0.53 to 0.61)
○ – (1.11 to 1.19)
○ – (0.25 to 0.32)

No, the answer is incorrect.
Score: 0

Accepted Answers:
– (0.25 to 0.32)

6) Based on the data provided in Q5, the value of $i^{H_2}_{c(A)}$ (A/cm^2) at $E_{corr\ (A\text{-}B)}$ will be; *1 point*

○ (7.3 to 8.0) x 10^{-2}
○ (4.2 to 5.0) x 10^{-2}
○ (1.2 to 2.0) x 10^{-1}
○ (2.2 to 3.0) x 10^{-2}

No, the answer is incorrect.
Score: 0

Accepted Answers:
(4.2 to 5.0) x 10^{-2}

7) Consider that the cross sectional area of metals A and B provided in Q5 are changed to 100 cm^2 and 1 cm^2 respectively. Assuming all the other parameters remain same, the value of $E_{corr\ (A\text{-}B)}$ (V) with respect to standard hydrogen electrode will be; *1 point*

○ – (0.87 to 0.95)
○ – (0.44 to 0.52)
○ – (1.09 to 1.17)
○ – (0.10 to 0.18)

No, the answer is incorrect.
Score: 0

Accepted Answers:
– (0.44 to 0.52)

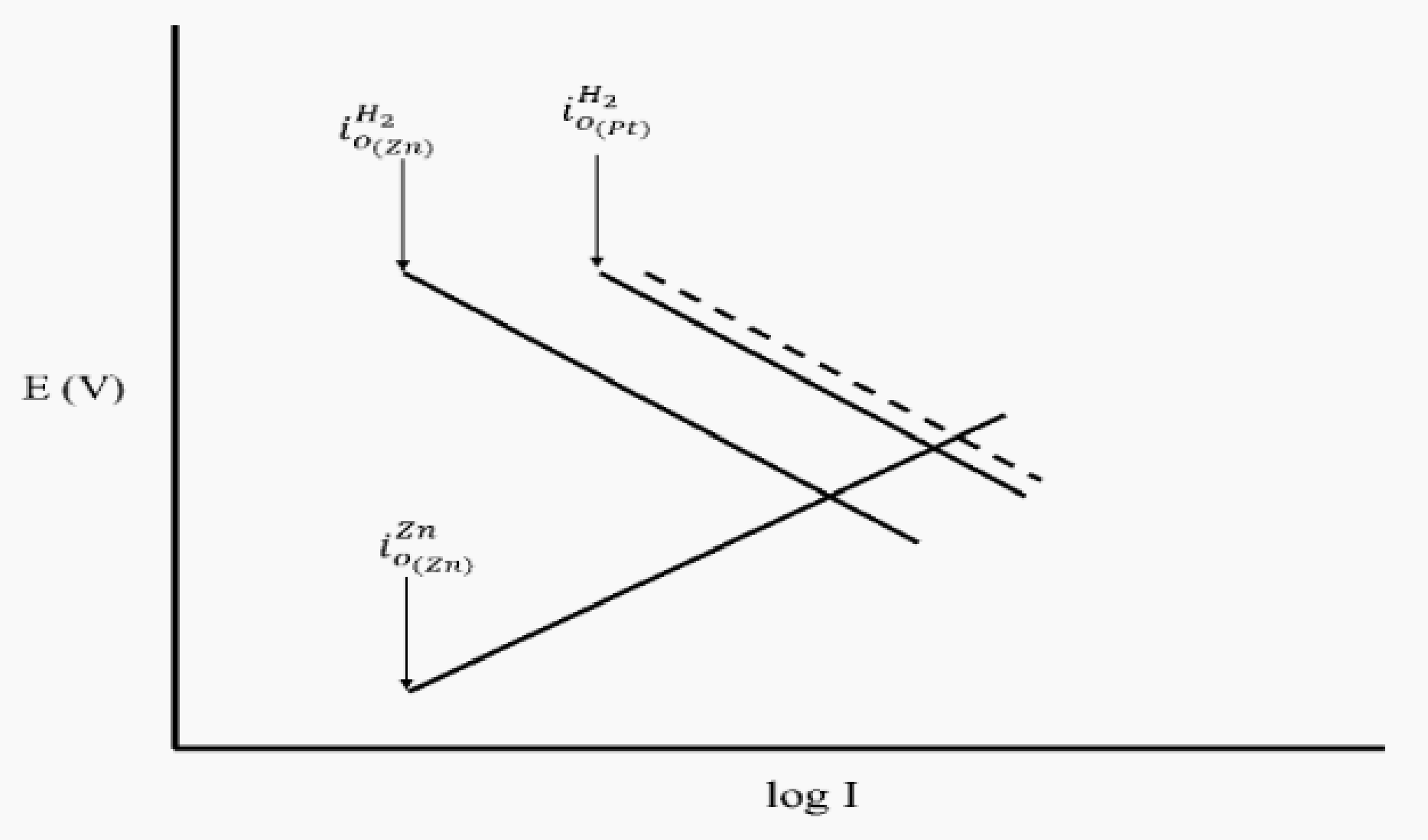
8) Based on the data provided in Q7, the value of $i^{H_2}_{c(A)}$ (A/cm^2) at $E_{corr\ (A\text{-}B)}$ will be; *1 point*

○ (4.2 to 5.0) x 10^{-4}
○ (1.3 to 2.1) x 10^{-4}
○ (6.7 to 7.5) x 10^{-4}
○ (9.6 to 10.5) x 10^{-3}

No, the answer is incorrect.
Score: 0

Accepted Answers:
(4.2 to 5.0) x 10^{-4}

9) Consider that a piece of zinc and platinum having cross sectional areas 1 cm^2 and 100 cm^2 respectively, are coupled together and immersed in a deaerated acidic solution. Which of the following E vs log I plots shows the correct resultant mixed potential for the couple? *1 point*

○


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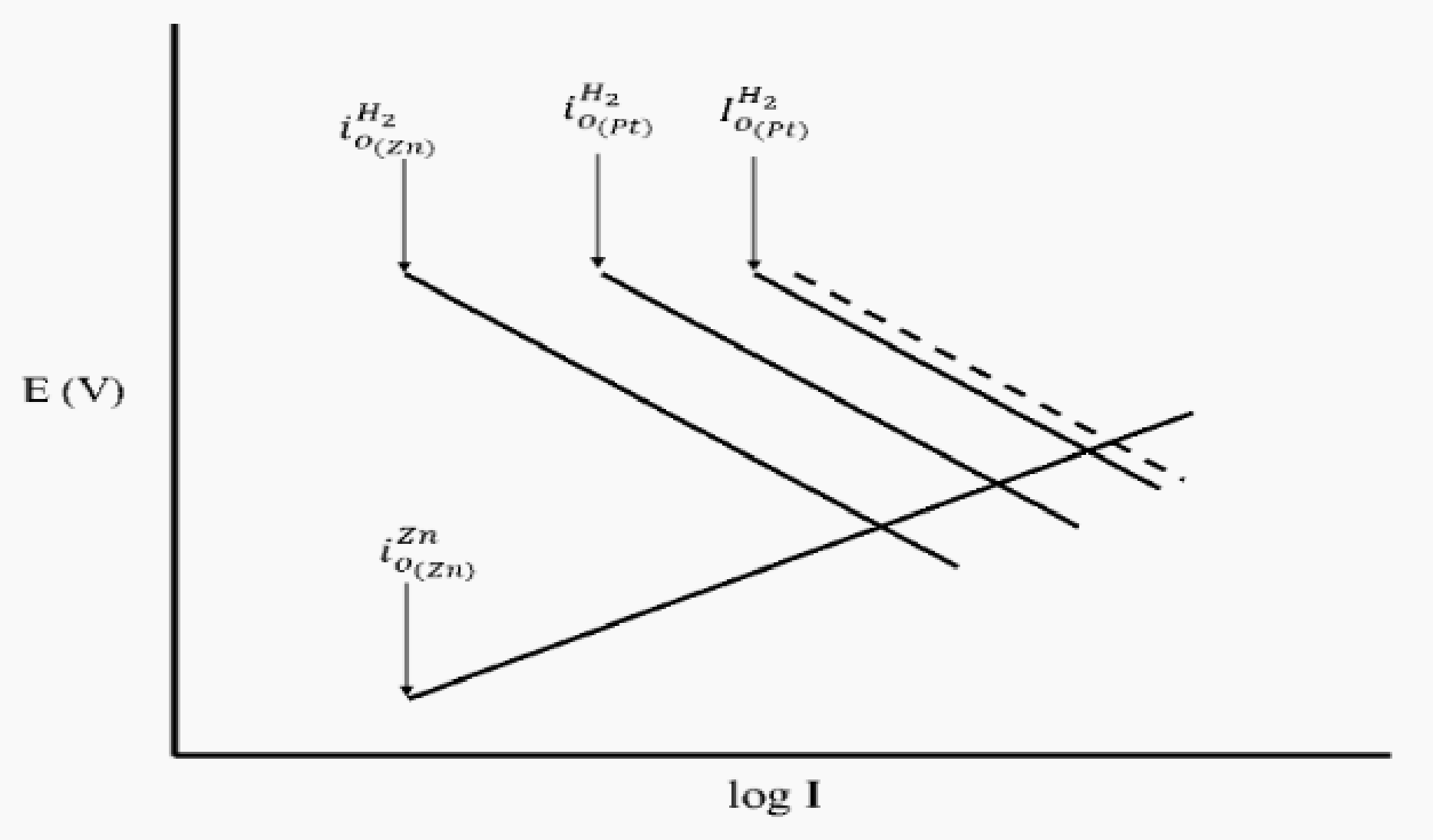

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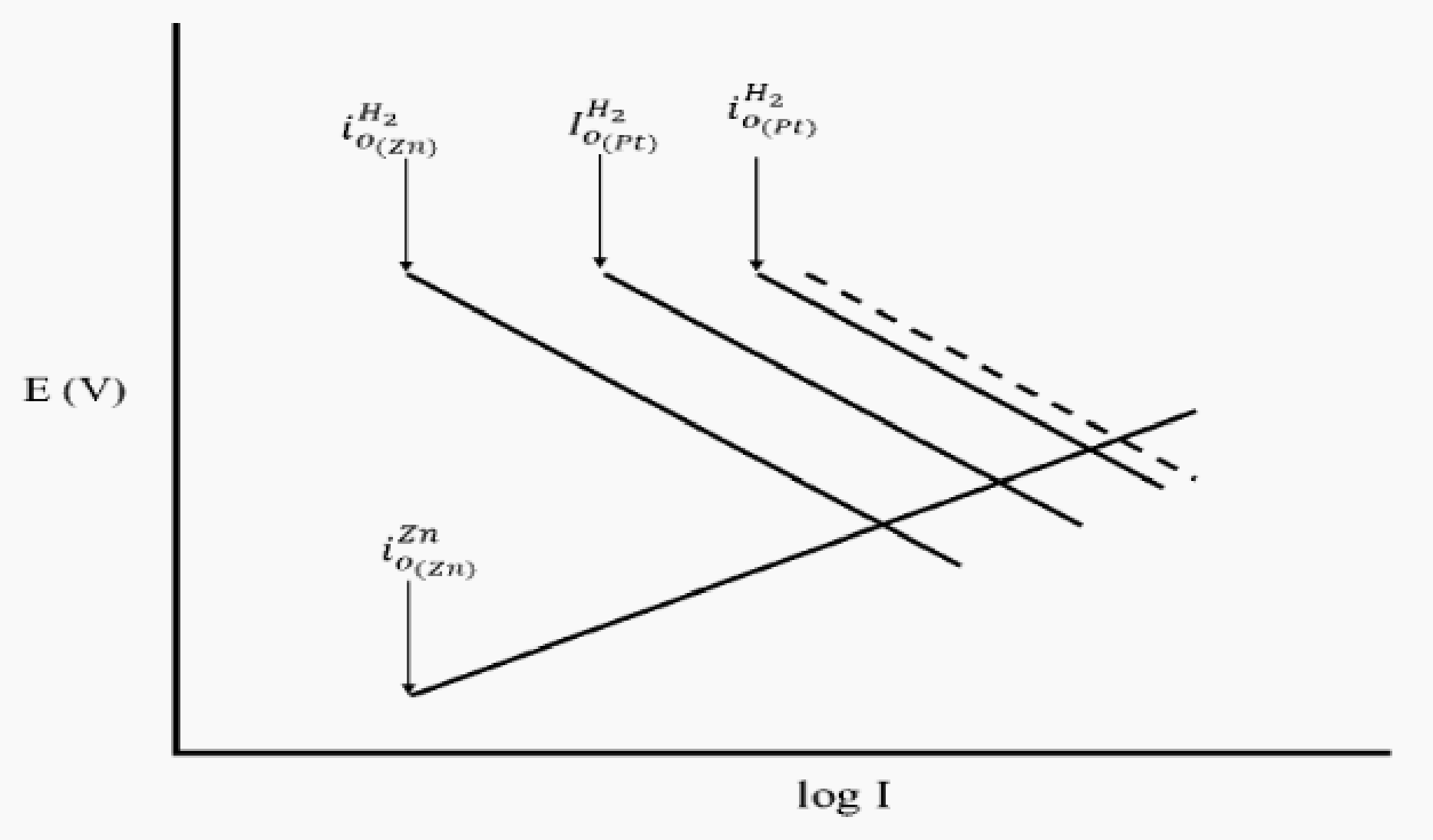

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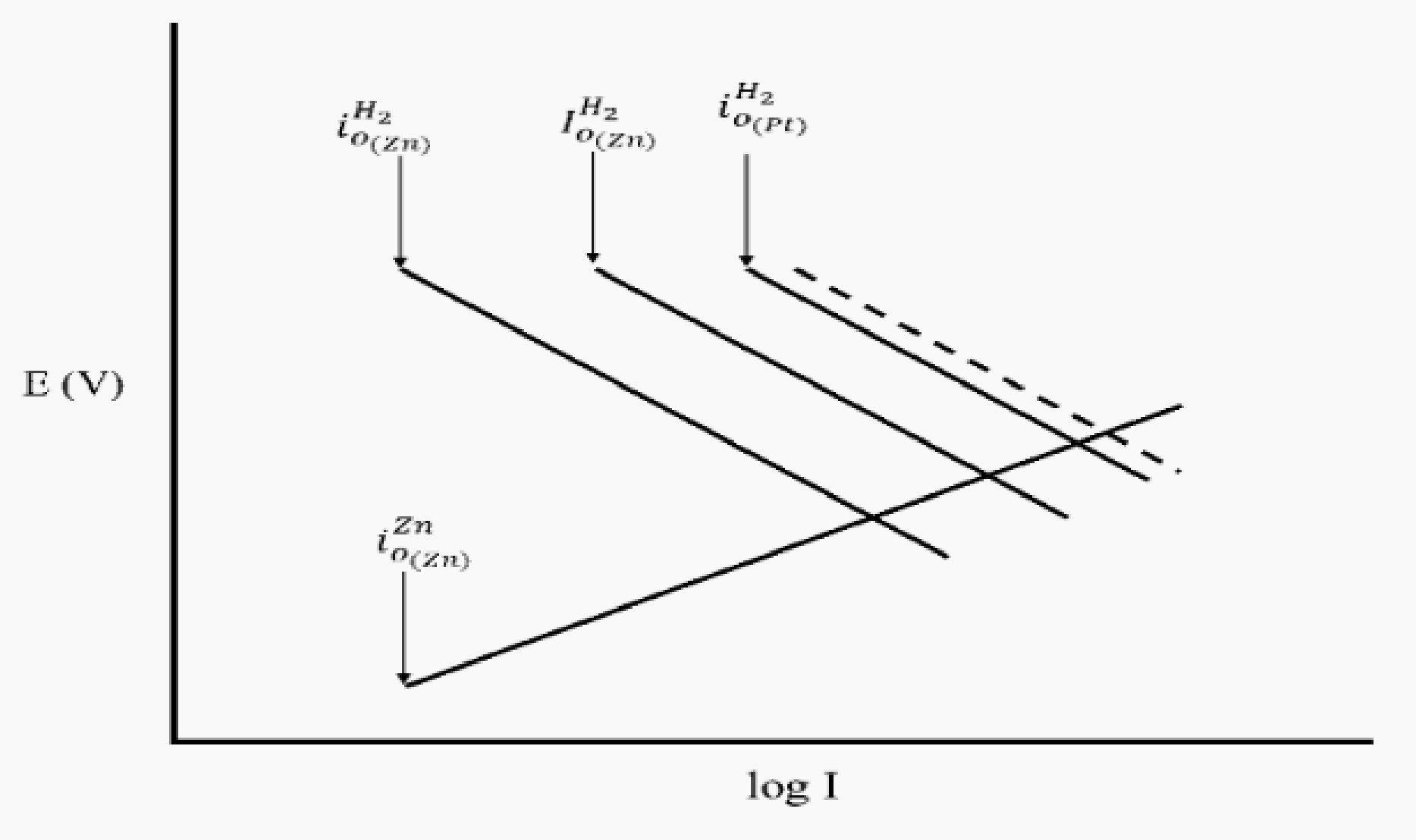
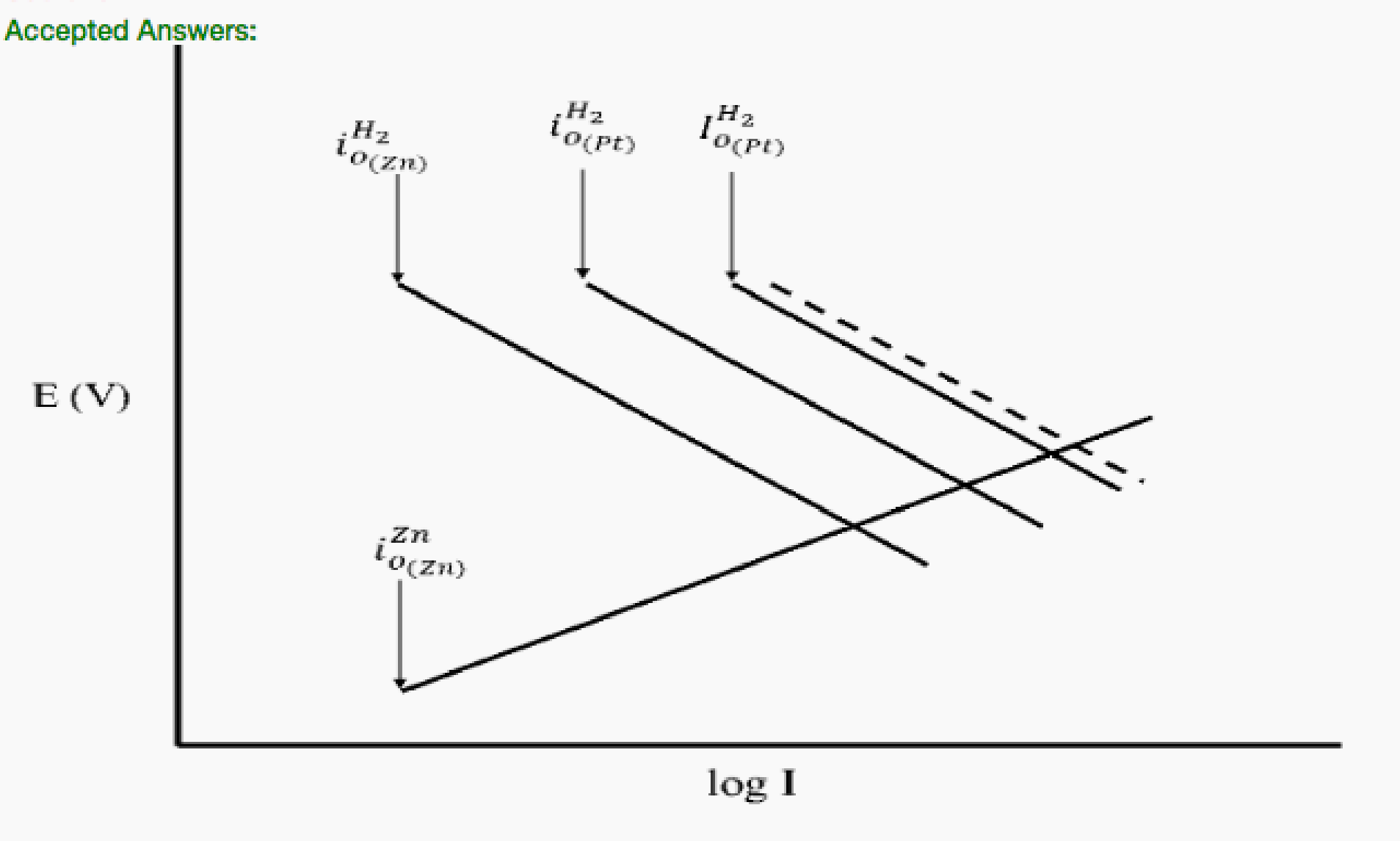
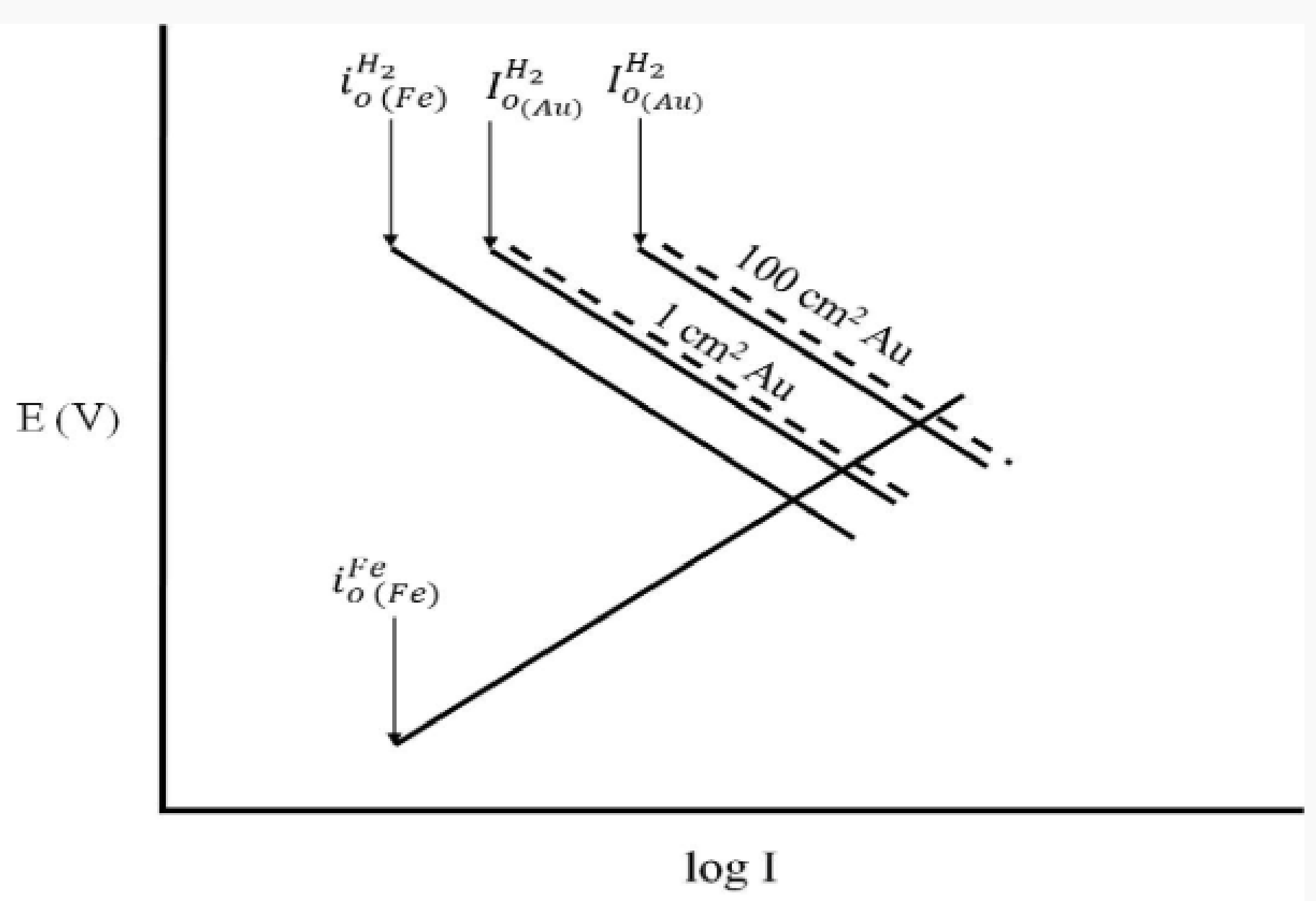


No, the answer is incorrect.
Score: 0

Accepted Answers:



10) Consider that a piece of iron and gold are coupled together and immersed in a deaerated acidic solution. Which of the following E vs log I plot correctly illustrates the effect of increase in gold cathode area? *1 point*

○


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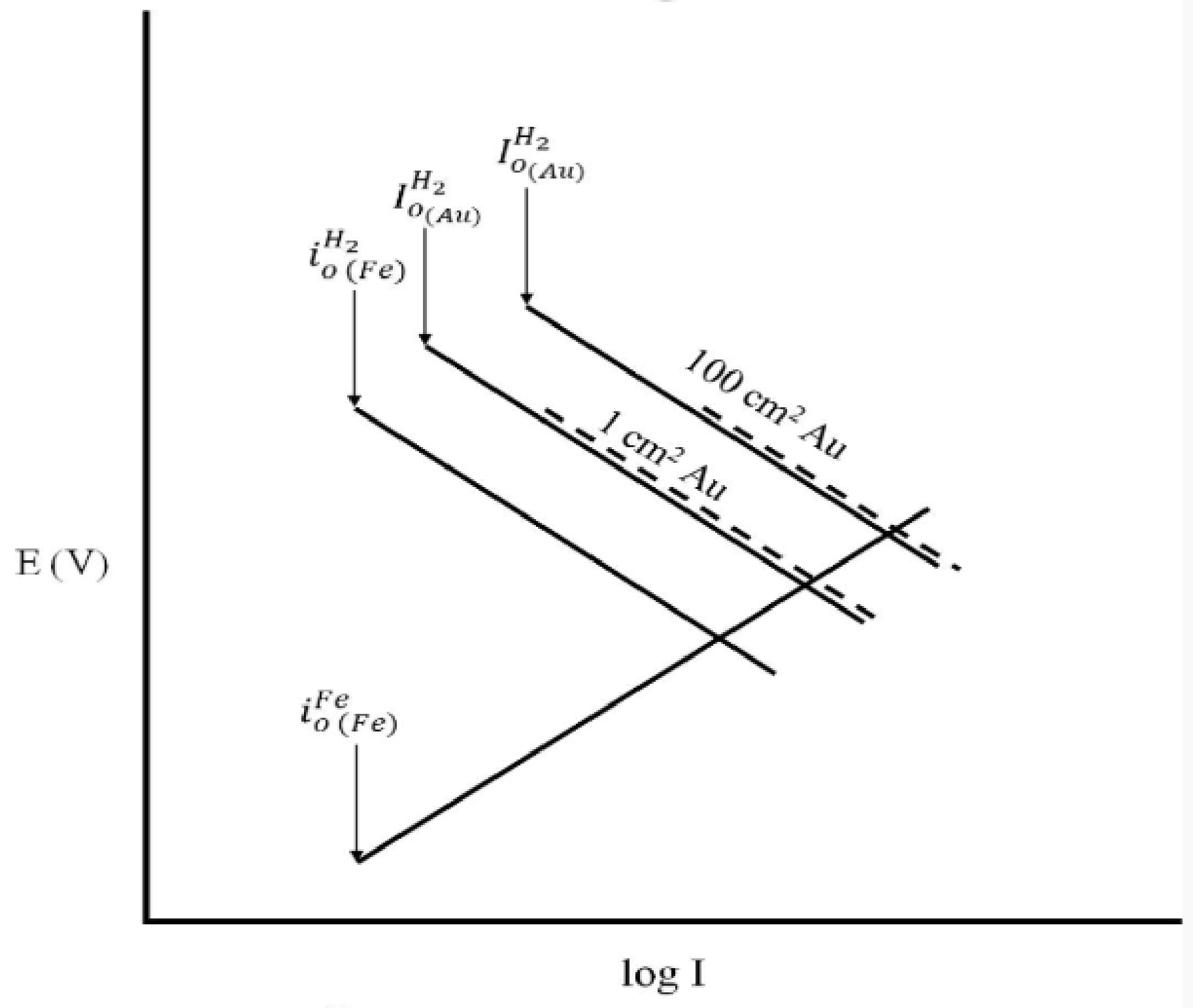

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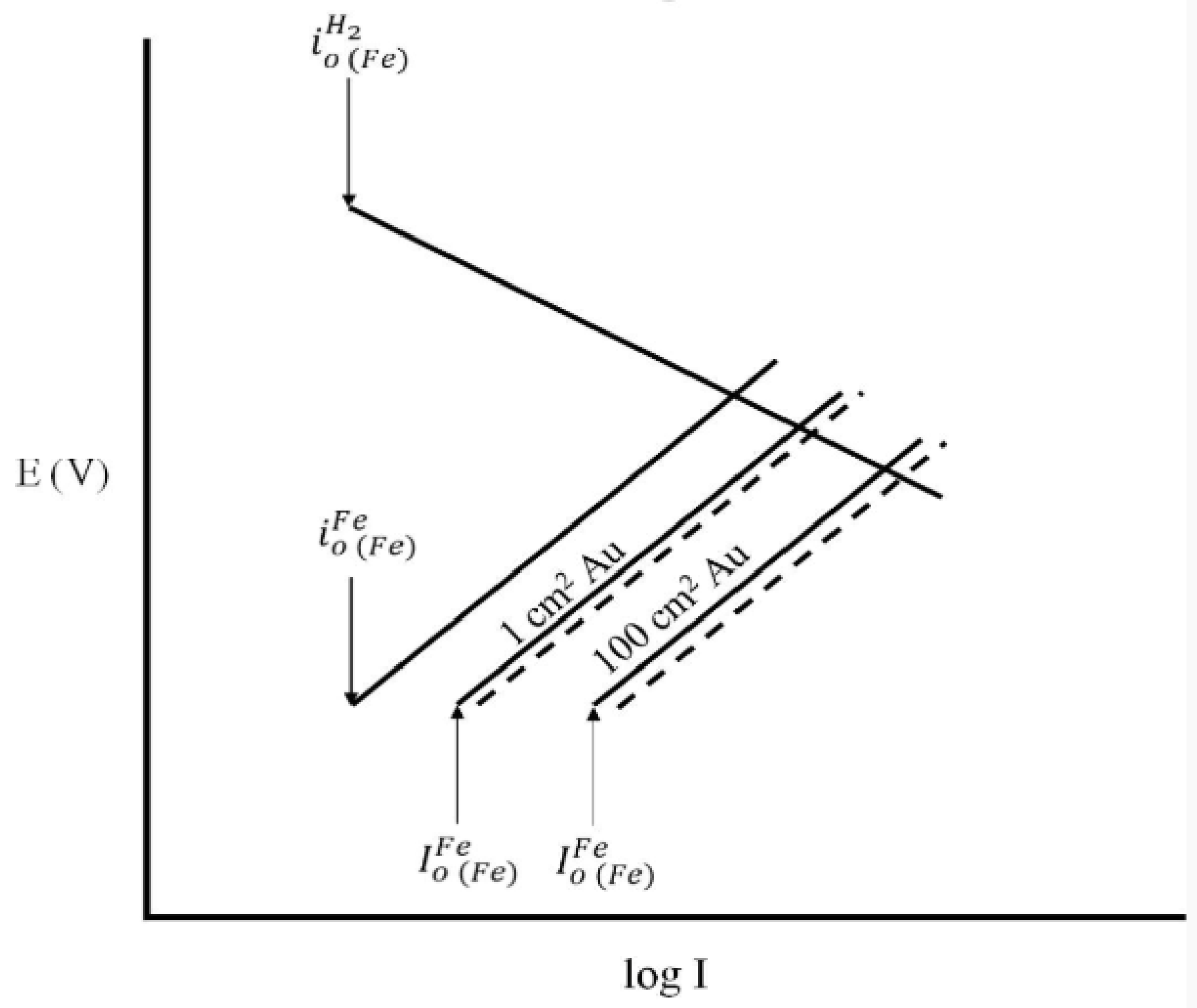

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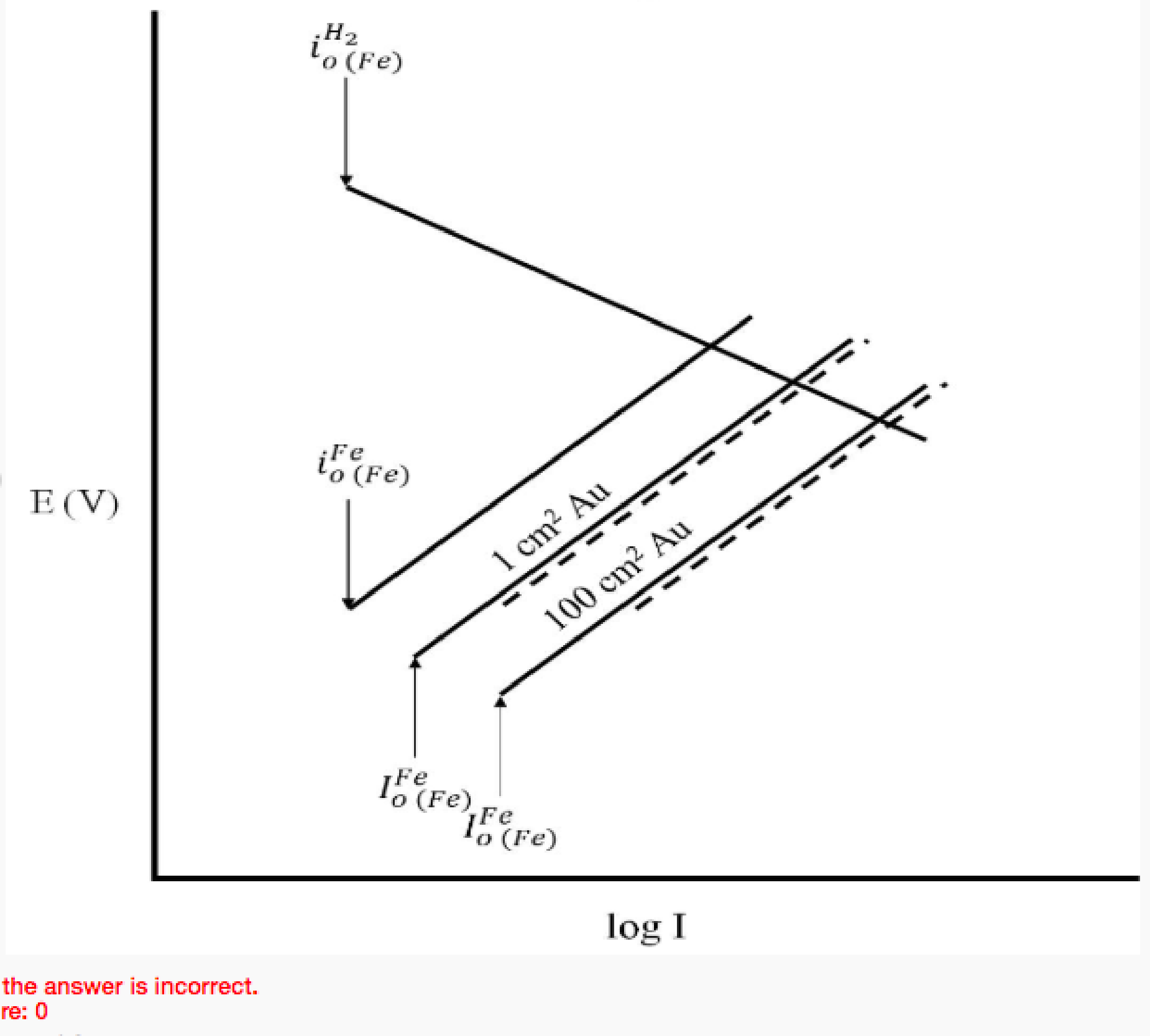

No, the answer is incorrect.
Score: 0

Accepted Answers: