Assignment 1

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

Due on 2019-02-13, 23:59 IST.

1) The relationship between an electrochemical reaction rate constant (k) and potential (E) is ________ (one word answer)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: String) Exponential
(Type: String) exp
(Type: String) exponentially

1 point

2) In a 3 electrode cell, it is preferable to have a large area counter electrode.

True
False

No, the answer is incorrect.
Score: 0

Accepted Answers:
True

1 point

3) Choose all the correct options: When an alternating sinusoidal potential is applied across a capacitor, under steady periodic response, the current

leads the potential
lags the potential
is in sync with the potential
none of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
leads the potential

1 point
5) In complex notation, with \( j \) being the square root of -1, if a sinusoidal potential of angular frequency \( \omega \) is applied, then the admittance of a capacitor with capacitance \( C \) Farad is given by

\[
\frac{1}{j\omega C}
\]

No, the answer is incorrect.
Score: 0

Accepted Answers:
\( j\omega C \)

6) Consider three resistors, \( R_1 = 50 \Omega \), \( R_2 = 30 \Omega \) and \( R_3 = 10 \Omega \). When they are connected in series, the net impedance is ______ \( \Omega \)

No, the answer is incorrect.
Score: 0

Accepted Answers:

\( 90 \) (Type: Numeric)

0.5 points

7) Consider three resistors, \( R_1 = 50 \Omega \), \( R_2 = 30 \Omega \) and \( R_3 = 10 \Omega \). When they are connected in parallel, the net impedance is ______ \( \Omega \)

No, the answer is incorrect.
Score: 0

Accepted Answers:

\( (Type: Range) \) 6.4,6.6

0.5 points

8) For a capacitor with a certain capacitance \( C \), the relationship between current \( i \) and potential \( E \) in time \( t \) domain is given by

\[
\frac{1}{j\omega L}, \omega L, j\omega L, \frac{1}{j\omega L}
\]
9) A capacitor (C) is connected in series with a resistor (R). The differential equation describing the current (i), overall potential (E) and potential drop across capacitor (E_c) relationship is given by

\[ i = \frac{1}{C} \frac{dE}{dt} \]
\[ i = C \frac{dE_c}{dt} \]
\[ E = \frac{1}{C} \frac{di}{dt} \]
\[ E = C \frac{di}{dt} \]

No, the answer is incorrect.

Score: 0

Accepted Answers:
\[ i = C \frac{dE_c}{dt} \]

10) Using the circuit given below, calculate the impedance at a frequency of 100 Hz. Here, \( R_{sol} = 20 \Omega \), \( R_t = 150 \Omega \), \( C_{dl} = 20 \Omega \). \( Z_{Re} = \) \[ \text{________}_\Omega \]

No, the answer is incorrect.

Score: 0

Accepted Answers:
\[ Z_{Re} = \frac{E - E_c}{R} \]

11) Using the circuit given below, calculate the impedance at a frequency of 100 Hz. Here, \( R_{sol} = 20 \Omega \), \( R_t = 150 \Omega \), \( C_{dl} = 20 \Omega \). \( Z_{Im} = \) \[ \text{________}_\Omega \]
12) In the above circuit (Q 11), what is the magnitude of impedance if the frequency is zero?

\[ \text{________ } \Omega \]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) -64,-60

0.5 points

13) In the above circuit (Q 11), what is the magnitude of impedance if the frequency is infinity?

\[ \text{________ } \Omega \]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 20

0.5 points