Assignment 4

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

Note: If you have any doubts/queries regarding this quiz, please ask it in the forum well before the submission deadline. We will be happy to answer your queries.

1) Which of the following is the correct potentiometer connection?

a) (1)  

b) (2)  

No, the answer is incorrect. Score: 0

Accepted Answers:  
a)
2) A potentiometer has 10 m long wire. The scale has 1 mm division (i.e., you can read the position of the jockey up to 1 mm precision). If the total voltage across the potentiometer wire is 2 \( V \), what is the voltage resolution of this setup (in \( V \))?

\[ \text{[Please enter only the numeric value without any unit.]} \]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 0.0002

3)

What is the maximum voltage (in \( V \)) that can be measured with the above potentiometer if the standardization is done with a 1.02 \( V \) standard cell, keeping the jockey at 510 cm during standardization?

\[ \text{[Please enter only the numeric value without any unit.]} \]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 2

4) A battery has a high internal resistance. Its EMF is found to be 0.8 \( V \) with a potentiometer. The actual EMF is

(a) > 0.8 \( V \)
(b) = 0.8 \( V \)
(c) < 0.8 \( V \)
(d) Either (a) or (c)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)
5) A potentiometer has 11 m long wire. We want to measure up to 1.1 V with this potentiometer. If the standard cell voltage is 1.02 V, then at what length the standardization should be done (in cm)?

[Please enter only the numeric value without any unit.]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 1020

6) A potentiometer is standardized at 510 cm with a 1.02 V standard cell. Then while measuring an unknown voltage, the null is found at 750 cm. What is the value of the unknown voltage (in V)?

[Please enter only the numeric value without any unit.]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 1.5

7) The output voltage for the shown voltage divider network is

\[
\begin{array}{c}
\text{R} \\
V_{in} = 1 \text{ V} \\
\text{R} \\
R \\
R \\
V_0 \\
\end{array}
\]

(a) \( V_0 = \frac{1}{2} V \)
(b) \( V_0 = \frac{1}{4} V \)
(c) \( V_0 = \frac{1}{5} V \)
(d) \( V_0 = \frac{1}{6} V \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c)
8) COMMON DATA for Q.8 and Q.11

Consider the DECADE potential divider shown below (Kelvin-Varley voltage divider)

![Diagram of a DECADE potential divider](image)

What should be the value of each resistance (in Ohm) in stage B?

[Please enter only the numeric value without any unit.]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 2000

9) What should be the value of each resistance (in Ohm) in stage D?

[Please enter only the numeric value without any unit.]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 80

10) What is the value of the $V_{\text{out}}$ (in Volt) under the configuration shown in the above figure?

[Please enter only the numeric value without any unit.]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 3.184

11) What is the resolution of this potential divider (in percentage of input voltage)?

[Please enter only the numeric value without any unit.]
12) In a coordinate potentiometer both the wires are standardized to have $1 \text{ mV/mm}$. An unknown voltage is balanced when the two jockeys are at 30 cm and 40 cm position respectively. What is the RMS value of the unknown voltage (in V)?

[Please enter only the numeric value without any unit.]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 0.01

1 point

13) COMMON DATA for Q.13 and Q.14

A polar AC potentiometer measures the voltage across a coil and a series connected 1 Ω precision resistor as $V_R = 1 \angle -20^\circ \text{ V}$ and $V_L = 0.72 \angle 40^\circ \text{ V}$, where the last value (coil voltage) is taken from the output of a 50:1 volt box. The supply frequency is 60 Hz.

How much is the coil resistance (in Ω)?

[Please enter only the numeric value without any unit.]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 17,19

1 point

14) How much is the coil inductance (in mH)?

[Please enter only the numeric value without any unit.]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 82,83

1 point
15) COMMON DATA for Q.15 and Q.21
Consider the Electro-Mechanical Energy meter shown below where $I_1 = A \cos(\omega t)$, $I_2 = A \cos(\omega t - 90^\circ)$

![Diagram of an Electro-Mechanical Energy meter]

At $t = 0$, flux under coil 1 is

(a) Zero
(b) Upwards
(c) Downwards

No, the answer is incorrect.
Score: 0
Accepted Answers: (c)

16) At $t = 0$, flux under coil 2 is

(a) Zero
(b) Upwards
(c) Downwards

No, the answer is incorrect.
Score: 0
Accepted Answers: (a)

17) At $t = 0$, flux under coil 1' is

(a) Zero
(b) Upwards
(c) Downwards

No, the answer is incorrect.
Score: 0
Accepted Answers: (b)
18) The magnetic field under the three coils

(a) It constant
(b) Is moving from left to right
(c) Is moving from right to left
(d) Neither constant, nor moving. It is only pulsating like a standing wave

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)

19) If the frequency of \( I_1 \) and \( I_2 \) is 50 Hz, then how many north poles (or south poles) are crossing the line AB every second.

[Please enter only the numeric value without any unit.]

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 50

20) If the magnet is moved from left to right over the stationary copper plate the Eddy current along the green line on the plate would flow

(a) Clockwise as seen from the top
(b) Anti-clockwise as seen from the top
(c) Will not flow at all
(d) Will flow in different directions along the different parts of the green line so that on an average there would be no circulating current

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

21) The restoring torque in an electro-mechanical energy meter should depend on the

(a) Angular deflection of the disk
(b) Angular velocity of the disk

(a)
22) An induction energy meter has meter constant 300 revolution/kWhr. If the meter reading was 082759 (revolution) on 1st January and if the meter reading is 104359 (revolution) on 1st February, then how much energy is consumed (in kW/hr) in the month of January?

[Please enter only the numeric value without any unit.]