PhysicsByAaryan

CSIR NET . GATE . JEST . BARC - Physics

Basic Electronics - CSIR NET Physics PYQs

Electronics . All PYQs (2015-2025) with answer key

4 questions . Answer key included

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Q1. [Dec 2016] . 3.5 marks

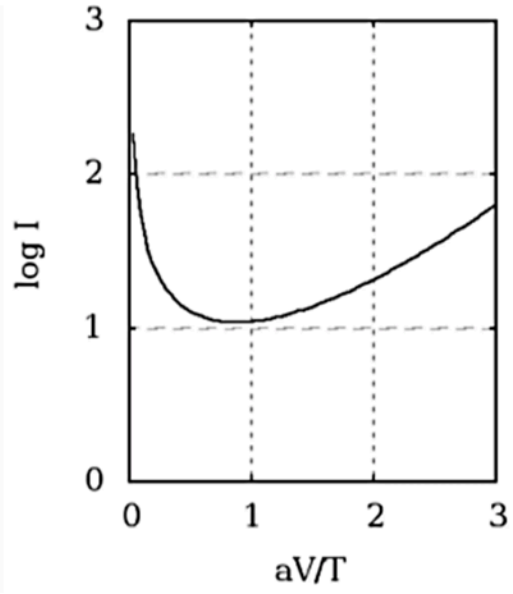
Electronics > Basic Electronics

CSIR NET	2016 Dec	3.5M

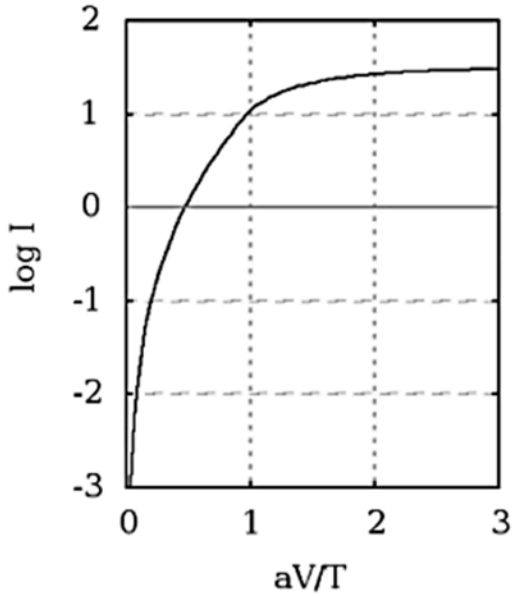
The $I-V$ characteristics of a device is

$I = I_s\left[\exp\left(\frac{aV}{T}\right) - 1\right]$, where T is the temperature and a and I_S are constants independent of T and V. Which one of the following plots is correct for a fixed applied voltage V ?

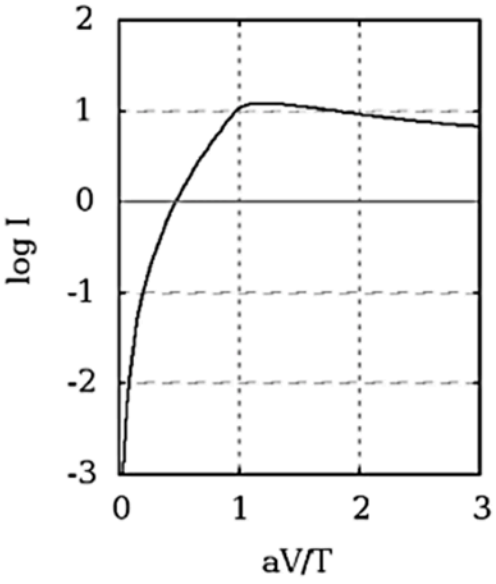
1.



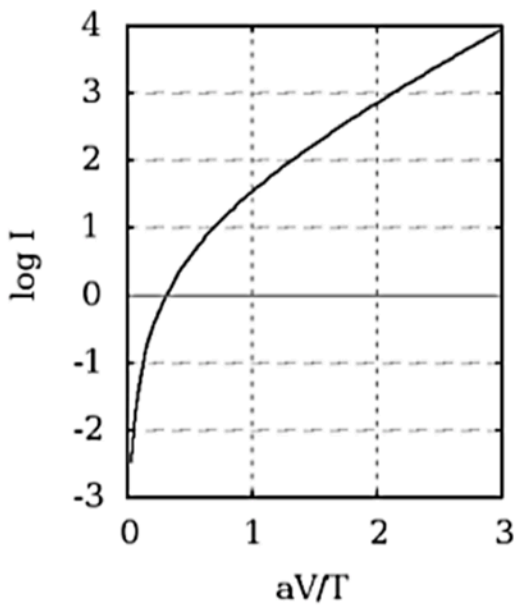
3.



2.



4.



Q2. [June 2016] . 3.5 marks

Electronics > Basic Electronics

CSIR NET	2016 June	3.5M

The dependence of current I on the voltage V of a certain device is given by

$$I = I_0\left(1 - \frac{V}{V_0}\right)^2$$

where I_0 and V_0 are constants. In an experiment the current I is measured as the voltage V applied across the device is increased. The parameters V_0 and $\sqrt{I_0}$ can be graphically determined as

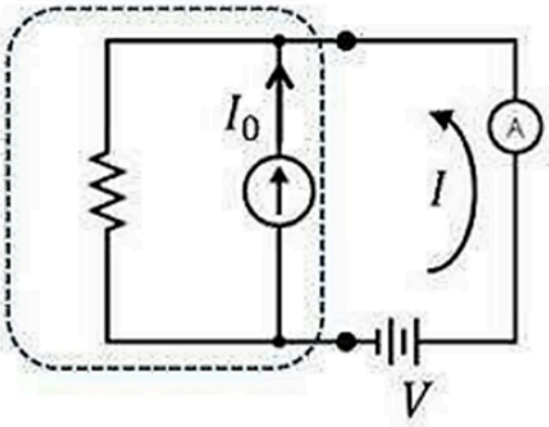
1. the slope and the y-intercept of the $I - V^2$ graph
2. the negative of the ratio of the y-intercept and the slope, and the y-intercept of the $I - V^2$ graph
3. the slope and the y-intercept of the $\sqrt{I} - V$ graph
4. the negative of the ratio of the y-intercept and the slope, and the y-intercept of the $\sqrt{I} - V$ graph

Q3. [Dec 2024] . 3.5 marks

Electronics > Basic Electronics

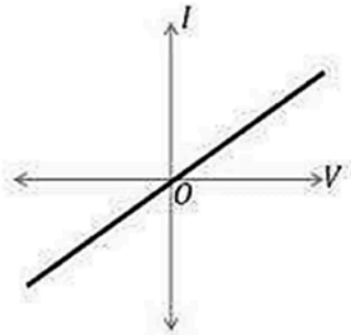
CSIR NET	2024 Dec	3.5M

A circuit component consists of a resistor in parallel with an ideal current source. The I-V characteristics of the component was measured using a variable voltage source and an ammeter ' A '.

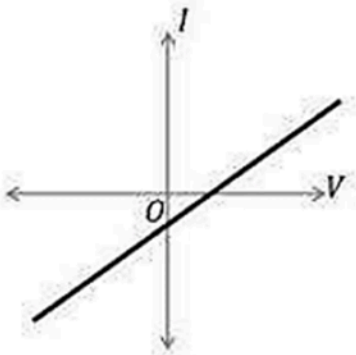


The arrow in the figure indicates the positive direction of current. The I-V characteristics of the component is best represented by

1.



2.



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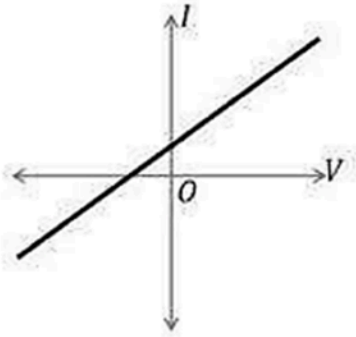

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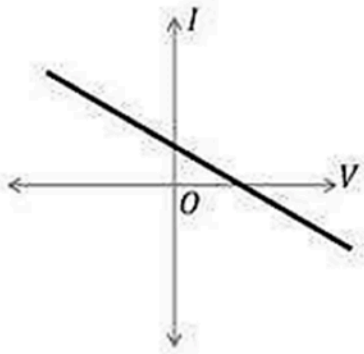


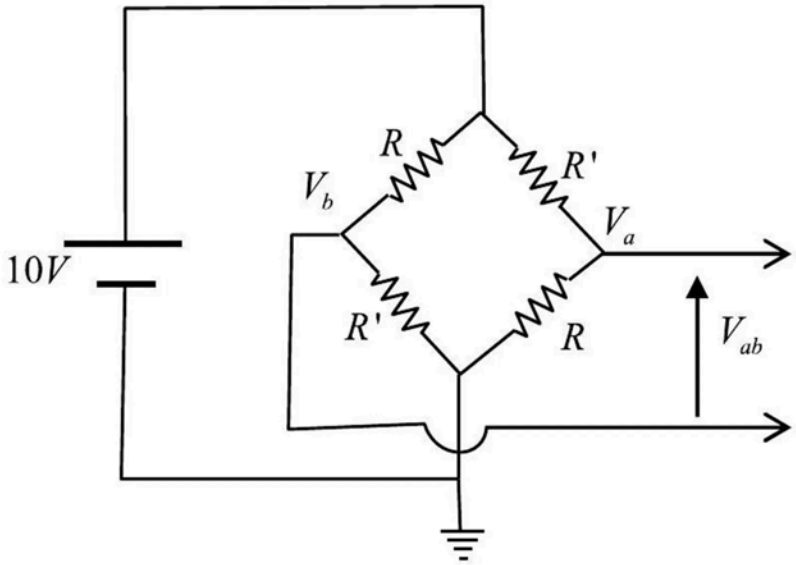
Q4. [June 2024] . 5.0 marks

Electronics > Basic Electronics

CSIR NET	2024 June	5M

In the circuit shown in the figure, the resistances R and R' change due to strain. While R increases, R' decreases by the same amount ΔR due to the applied strain. The unstrained values of R and R' are 100Ω each. If same strain is applied to all the resistors, and the output voltage (V_{ab}) changes to 0.3 V , then ΔR is closest to

1. 3Ω
2. 1.5Ω
3. 4.5Ω
4. 6Ω



Answer Key

4 questions . Subject and topic for quick revision

Q. No	Subject	Topic	Answer
Q1	Electronics	Basic Electronics	**4**
Q2	Electronics	Basic Electronics	**4**
Q3	Electronics	Basic Electronics	**2**
Q4	Electronics	Basic Electronics	**1**

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