Q.1 Read the following statements carefully:Y: The resistivity of a semiconductor decreases with the increase of temperature.Z: In a conduction solid, rate of collision between free electrons and ions increases with the increase

of temperature. Select the correct statement(s) from the following. (A)Y is true but z is false (B)Y is false but z is true

(C) Y is true and z is correct reason for y (D)Both y and z are true

Q.2 The current in a metallic conductor is plotted against voltage at two different temperatures T1 and T2. Which of the following options is correct?



Q.3 A conducting wire has a resistance of 10 Ω at 0°C and its coefficient of thermal resistance is $\alpha = 1273/°$ C. The resistance of wire at a temperature 273°C will be (line =1)

(A) 0 Ω	(B) 5 Ω	(C) 10e Ω	$(\mathbf{D})\frac{10}{e}\Omega$
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Q.4 Resistance of a resistor at temperature t^oC is Rat = $R0(1+\alpha t+\beta t^2)$, where R0 is the resistance at 0^oC. The temperature coefficient of resistance at temperature t ^oC is

(A) $\frac{(1 + \alpha t + \beta t^2)}{\alpha + 2\beta t}$ (B) $(\alpha + 2\beta t)$ (C) $\frac{\alpha + 2\beta t}{(1 + \alpha t + \beta t^2)}$ (D) $\frac{\alpha + 2\beta t}{2(1 + \alpha t + \beta t^2)}$

Q.5 The figure shows a network of currents. The current i will be (A)3 a (B)13 a (C) 23 a



Q.6 Find the current flowing through the resistance R_1 of the circuit shown in the figure. Th resistance are equal to $R_1 = 10 \Omega$, $R_2 = 20 \Omega$ and $R_3 = 30 \Omega$ and the potentials of points 1,2 and 3 are given as $V_1 = 10 V$, $V_2 = 6 V$ and $V_3 = 5 V$.

(A)0.1 A **(B)**0.2 A **(C)** 0.3 A **(D)**0.4 A



Q.7 A 5 V battery and a 2 V battery are connected to the resistances as shown. The current in the 10 Ω resistor is:



Q.8 A potential divider is used to give outputs of 2 V and 3 V from a 5 V source as shown in figure. Which combination of resistances, R₁, R₂ and R₃ will give the correct voltage as mentioned in the figure?

(A)

(B)

1 1	2

$R_1k\Omega$	$R_2 k \Omega$	$R_3 k \Omega$
2	1	2

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$R_1 \: k \: \Omega$	$R_2 k \Omega$	$R_3 k \Omega$
3	3	2

(D)

$R_1k\Omega$	$R_2 k \Omega$	$R_3k\Omega$
3	2	3



ANSWER KEY

-30 V

Q.	1	2	3	4	5	6	7	8	9	10
Sol.	(C)	(B)	(C)	(C)	(C)	(B)	(B)	(B)	(A)	(A)

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