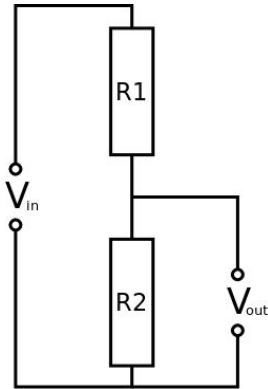


# Potential Divider Questions



The following questions all refer to the standard potential divider made from two resistors,  $R_1$  and  $R_2$ , with the output voltage measured across  $R_2$ .

Voltages and resistance values should be given to 2 significant figures.

## Question 1

$V_{in} = 5.0\text{V}$ ,  $R_1 = 100\Omega$  and  $R_2 = 150\Omega$ . What is  $V_{out}$ ?

- A. 5.0V
- B. 3.0V
- C. 2.0V
- D. 1.0V

## Question 2

$V_{in} = 9.0\text{V}$ ,  $R_1 = 10\text{k}\Omega$  and  $R_2 = 12\text{k}\Omega$ . What is  $V_{out}$ ?

- A. 4.9V
- B. 9.0V
- C. 10V
- D. 12V

## Question 3

$V_{in} = 10\text{V}$  and  $V_{out} = 4.0\text{V}$ . If  $R_1 = 300\Omega$ , what is  $R_2$ ?

- A.  $200\Omega$
- B.  $300\Omega$
- C.  $400\Omega$
- D.  $1000\Omega$

### Question 4

$V_{in} = 24\text{ V}$  and  $V_{out} = 5.0\text{ V}$ . If  $R1 = 47\text{ k}\Omega$ , what is  $R2$ ?

- A.  $10\text{ k}\Omega$
- B.  $12\text{ k}\Omega$
- C.  $24\text{ k}\Omega$
- D.  $180\text{ k}\Omega$

### Question 5

$V_{in} = 6.0\text{ V}$  and  $V_{out} = 5.0\text{ V}$ . If  $R2 = 100\ \Omega$ , what is  $R1$ ?

- A.  $20\ \Omega$
- B.  $50\ \Omega$
- C.  $60\ \Omega$
- D.  $120\ \Omega$

### Question 6

$V_{in} = 48\text{ V}$  and  $V_{out} = 9.0\text{ V}$ . If  $R2 = 27\text{ k}\Omega$ , what is  $R1$ ?

- A.  $9.0\text{ k}\Omega$
- B.  $27\text{ k}\Omega$
- C.  $39\text{ k}\Omega$
- D.  $120\text{ k}\Omega$

### Question 7

$R1 = 100\ \Omega$  and  $R2 = 200\ \Omega$ . If  $V_{out} = 5.0\text{ V}$ , what is  $V_{in}$ ?

- A.  $2.5\text{ V}$
- B.  $5.0\text{ V}$
- C.  $7.5\text{ V}$
- D.  $10\text{ V}$

### Question 8

$R1 = 100\text{ k}\Omega$  and  $R2 = 33\text{ k}\Omega$ . If  $V_{out} = 2.0\text{ V}$ , what is  $V_{in}$ ?

- A.  $6.1\text{ V}$
- B.  $8.1\text{ V}$
- C.  $12\text{ V}$
- D.  $13\text{ V}$

## Question 9

$V_{out}$  is half of  $V_{in}$ . If  $R_1 = 220\Omega$ , what is  $R_2$ ?

- A.  $110\Omega$
- B.  $220\Omega$
- C.  $330\Omega$
- D. Cannot be determined without knowing  $V_{in}$

## Question 10

$V_{in} = 12V$  and  $V_{out} = 4.0V$ . Which pair of resistors could be used?

- A.  $300\Omega$  and  $100\Omega$
- B.  $120\Omega$  and  $40\Omega$
- C.  $80\Omega$  and  $100\Omega$
- D.  $200\Omega$  and  $100\Omega$

## Question 11

In a potential divider,  $R_2$  is an LDR. What happens to  $V_{out}$  as the light level increases?

- A.  $V_{out}$  increases
- B.  $V_{out}$  decreases
- C.  $V_{out}$  stays the same

## Question 12

In a potential divider,  $R_1$  is an ntc thermistor. What happens to  $V_{out}$  as the temperature increases?

- A.  $V_{out}$  increases
- B.  $V_{out}$  decreases
- C.  $V_{out}$  stays the same

## Question 13

In a potential divider,  $R_1$  and  $R_2$  are fixed but  $V_{in}$  increases. What happens to  $V_{out}$ ?

- A.  $V_{out}$  increases
- B.  $V_{out}$  decreases
- C.  $V_{out}$  stays the same

# Answers

1. B
2. A
3. A
4. B
5. A
6. D
7. C
8. B
9. B
10. D
11. B
12. A
13. A

# Website

[http://www.pfnicholls.com/Electronics\\_Resources/QuestionIndex.html](http://www.pfnicholls.com/Electronics_Resources/QuestionIndex.html)

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