

PhysicsByAaryan

CSIR NET . GATE . JEST . BARC - Physics

Transistors - CSIR NET Physics PYQs

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

9 questions . Answer key included

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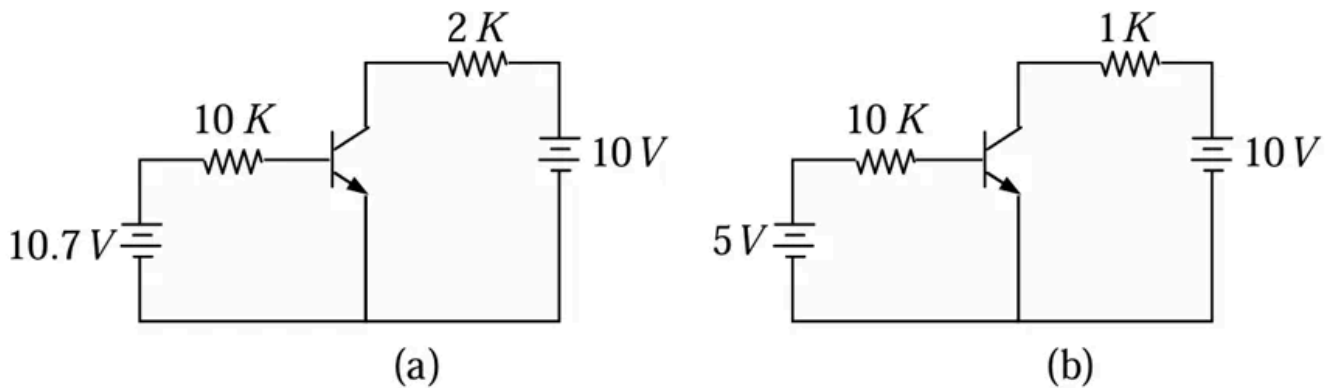
Contact: 9501976811

Q1. [June 2015] . 3.5 marks

Electronics > Transistors

CSIR NET	2015 June	3.5 M
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Consider the circuits show in Figures (a) and (b) below.



If the transistors in Figures (a) and (b) have current gain (β_{dc}) of 100 and 10 respectively, then they operate in the.

1. active region and saturation region respectively
2. saturation region and active region respectively
3. saturation region in both cases
4. active region in both cases

Q2. [Dec 2017] . 3.5 marks

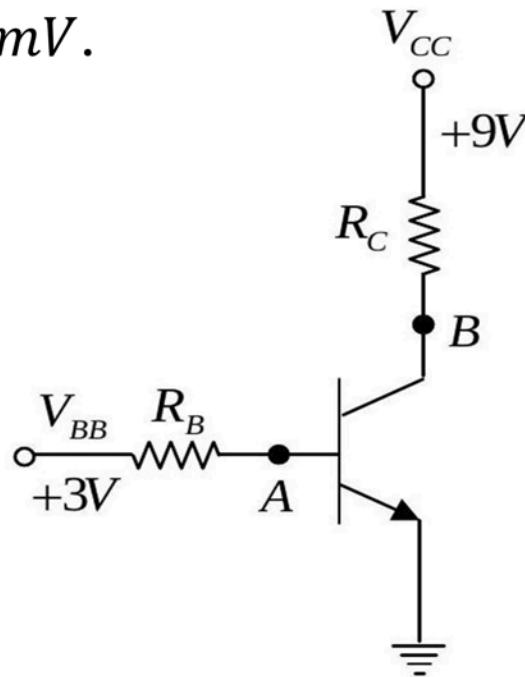
Electronics > Transistors

CSIR NET

2017 Dec

3.5M

In the circuit below the voltages V_{BB} and V_{CC} are kept fixed, the voltage measured at B is a constant, but that measured at A fluctuates between a few μV to a few mV .



From these measurements it may be inferred that the

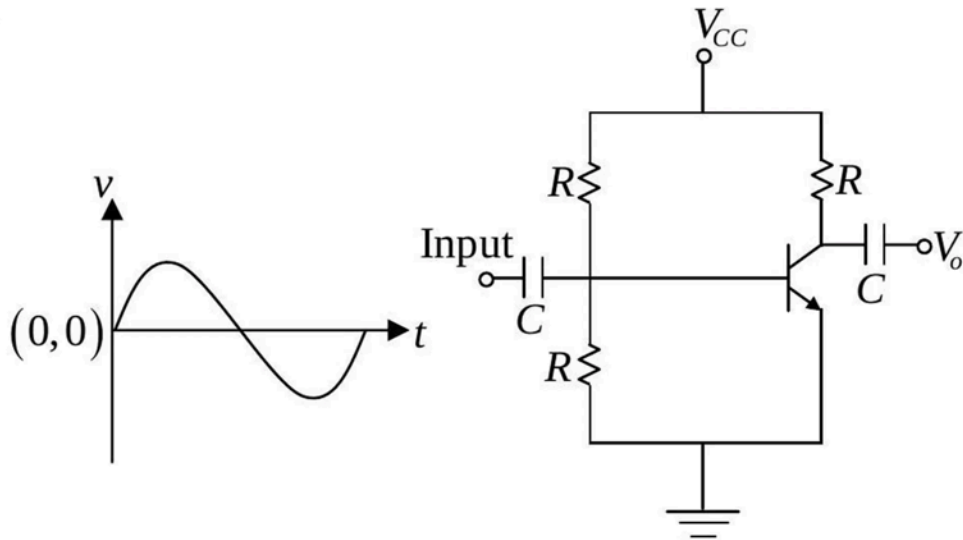
1. base is open internally
2. emitter is open internally
3. collector resistor is open
4. base resistor is open

Q3. [Dec 2018] . 3.5 marks

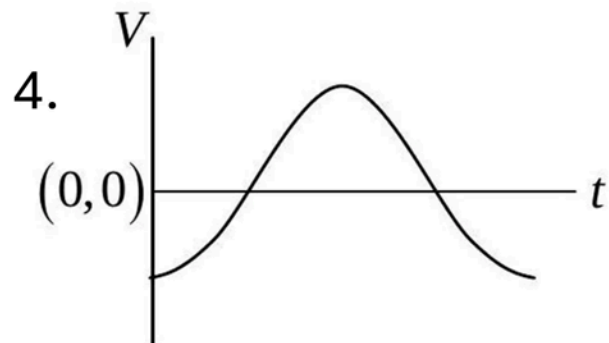
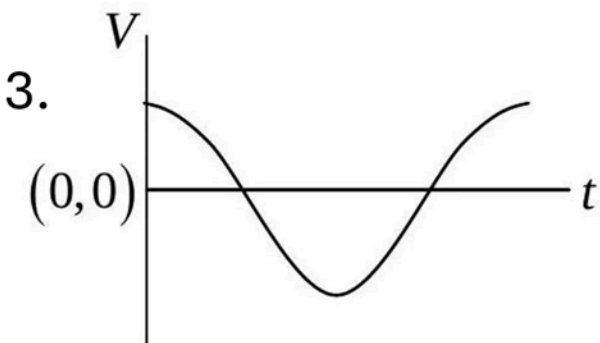
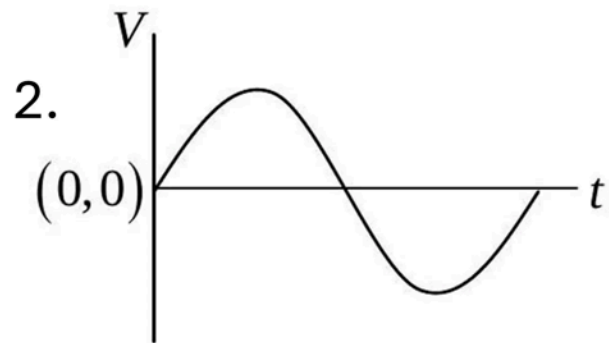
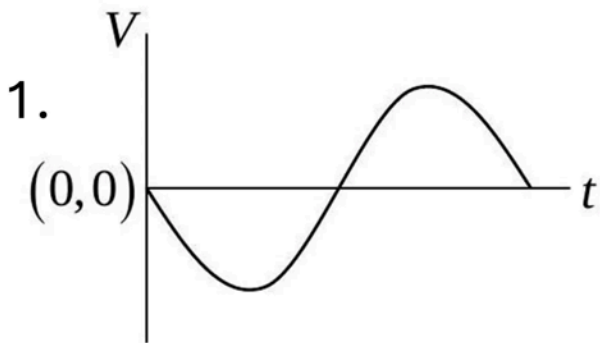
Electronics > Transistors

CSIR NET	2018 Dec	3.5M
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A sinusoidal signal is an input to the following circuit



Which of the following graphs best describes the output wave function?



Q4. [June 2018] . 3.5 marks

Electronics > Transistors

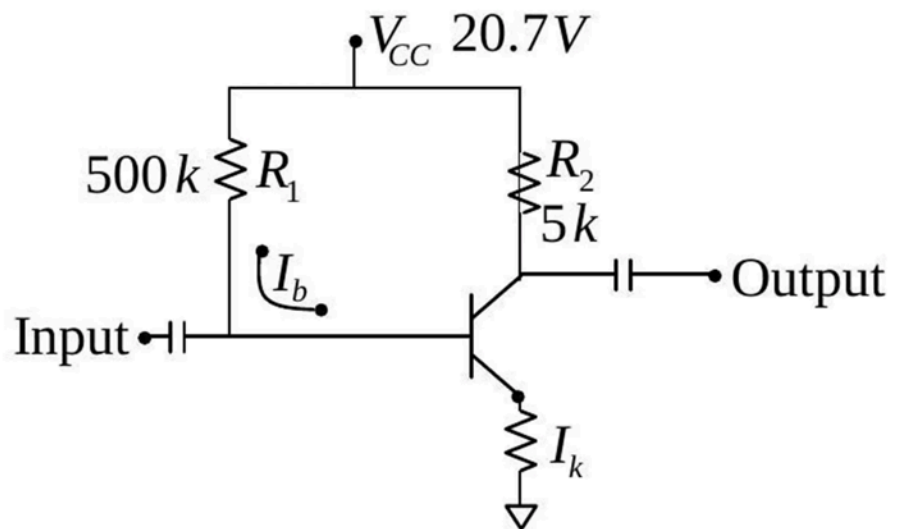
CSIR NET

2018 June

3.5M

In the following circuit, the value of the common-emitter forward current amplification factor β for the transistor is 100 and V_{BE} is $0.7V$. The base current I_B is

1. $40\mu A$
2. $30\mu A$
3. $44\mu A$
4. $33\mu A$



Q5. [Dec 2019] . 5.0 marks

Electronics > Transistors

CSIR NET

2019 Dec

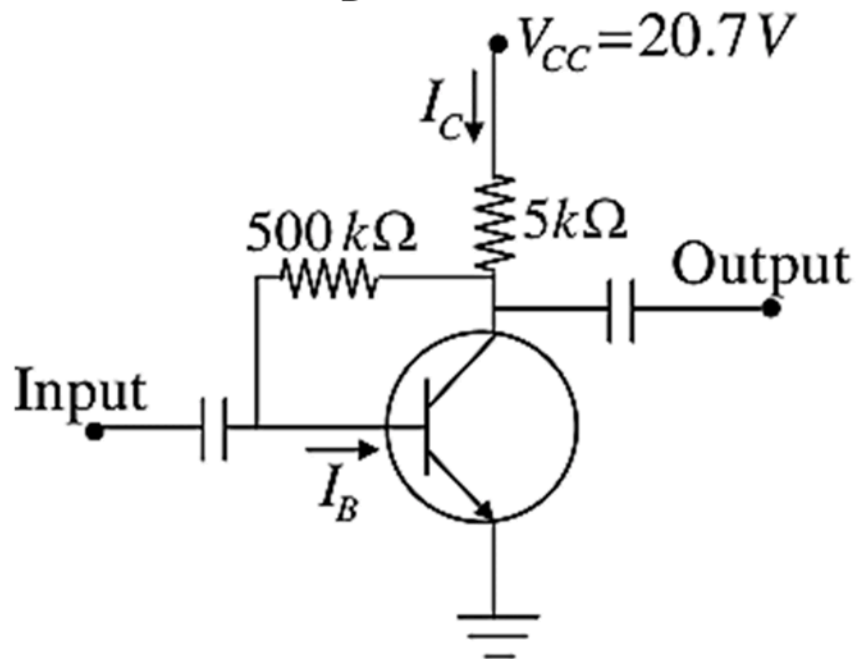
5M

In a collector feedback circuit shown in the figure below, the base emitter voltage $V_{BE} = 0.7 \text{ V}$ and

current gain $\beta = \frac{I_C}{I_B} = 100$ for the transistor

The value of the base current I_B is

1. $20 \mu \text{ A}$
2. $40 \mu \text{ A}$
3. $10 \mu \text{ A}$
4. $100 \mu \text{ A}$



Q6. [June 2019] . 3.5 marks

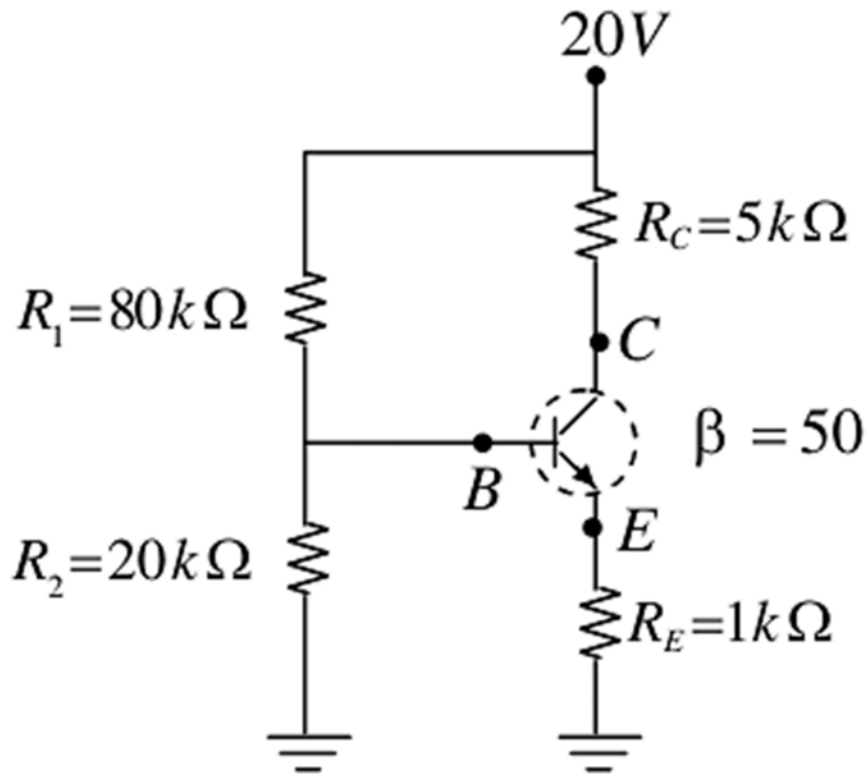
Electronics > Transistors

CSIR NET

2019 June

3.5M

An npn -transistor is connected in a voltage divider configuration as shown in the figure below.



If the resistor R_2 is disconnected, the voltages V_B at the base and V_C at the collector change as follows.

1. both V_B and V_C increase
2. both V_B and V_C decrease
3. V_B decreases, but V_C increases
4. V_B increases, but V_C decreases

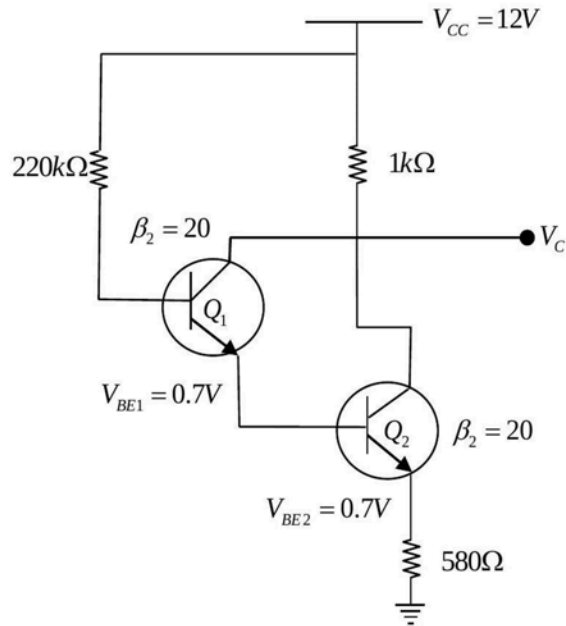
Q7. [June 2022] . 3.5 marks

Electronics > Transistors

CSIR NET	2022 June	3.5M
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The figure below shows a circuit with two transistors, Q_1 and Q_2 , having current gains β_1 and β_2 respectively. The collector voltage V_C will be closest to

1. 0.9 V
2. 2.2 V
3. 2.9 V
4. 4.2 V



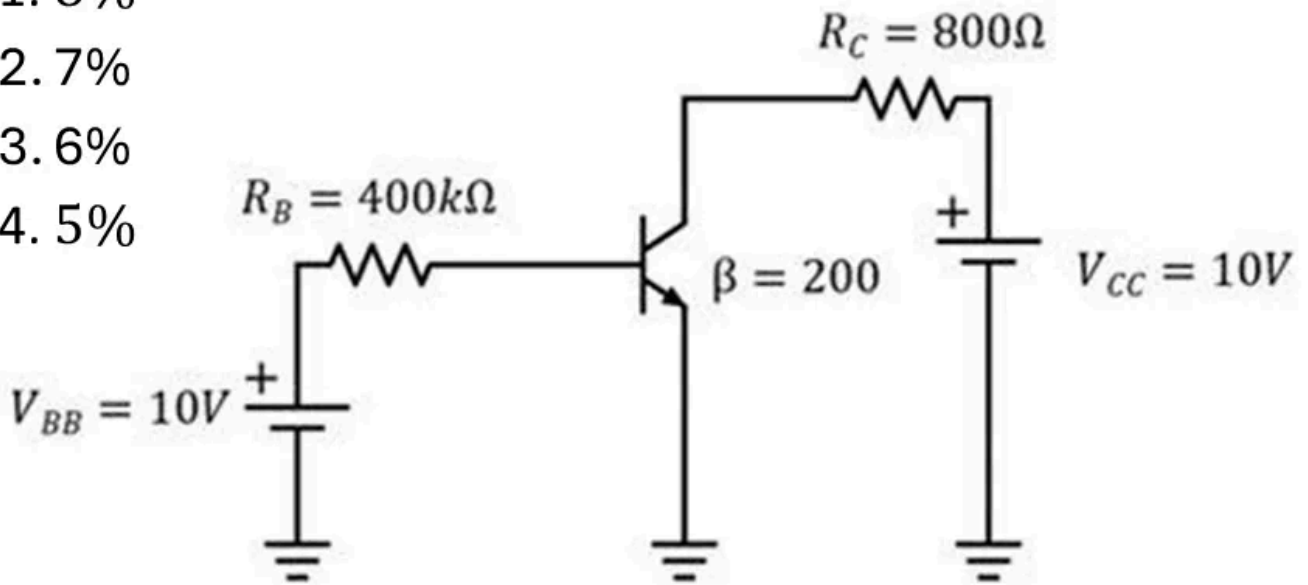
Q8. [Dec 2025] . 3.5 marks

Electronics > Transistors

CSIR NET	2025 Dec	3.5M	Electronics
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In the transistor circuit given below the voltage V_{CC} fluctuates by 5%. Then the fluctuation in V_{CE} would be closest to (take $V_{BE} = 0.7 \text{ V}$)

- 1. 8%
- 2. 7%
- 3. 6%
- 4. 5%



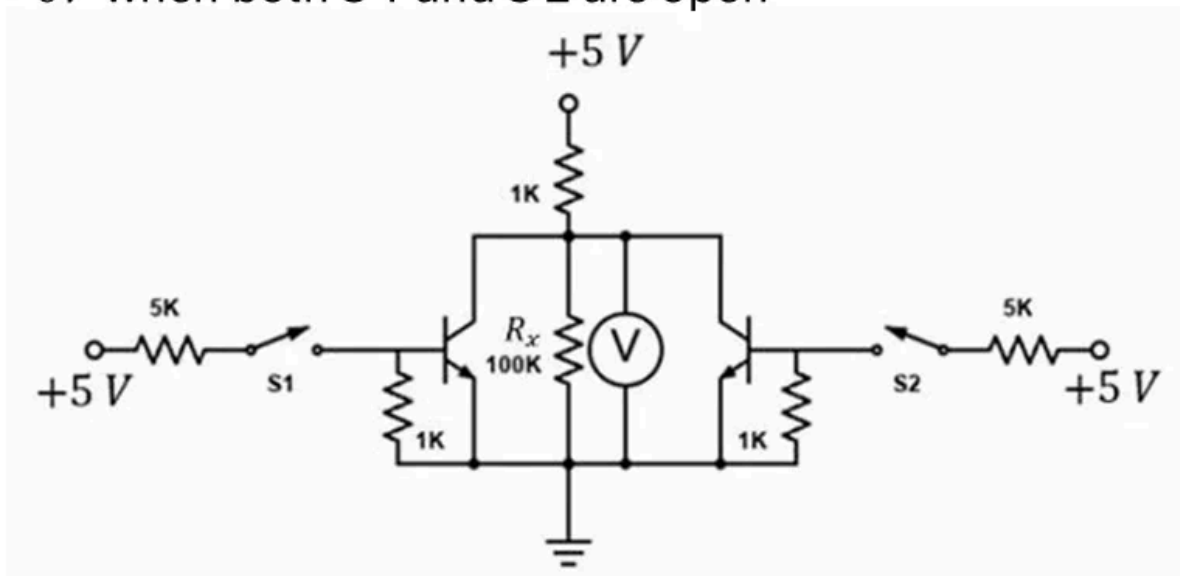
Q9. [June 2025] . 3.5 marks

Electronics > Transistors

CSIR NET	2025 June	3.5M	Electronics
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The circuit, composed of npn transistors of high β , resistors and switches, is shown in the figure. The biasing is sufficient to turn on the transistors when respective switches S1 and S2 are closed. The voltage across the resistor $R_x = 100\text{k}\Omega$ is

1. $\sim 5\text{V}$ when both S 1 and S 2 are closed
2. $\sim 5\text{V}$ when either S 1 or S 2 are closed
3. $\sim 5\text{V}$ when both S 1 and S 2 are open
4. $\sim 0\text{V}$ when both S 1 and S 2 are open



Answer Key

9 questions . Subject and topic for quick revision

Q. No	Subject	Topic	Answer
Q1	Electronics	Transistors	2
Q2	Electronics	Transistors	4
Q3	Electronics	Transistors	1
Q4	Electronics	Transistors	*
Q5	Electronics	Transistors	1
Q6	Electronics	Transistors	4
Q7	Electronics	Transistors	2
Q8	Electronics	Transistors	1
Q9	Electronics	Transistors	3

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