

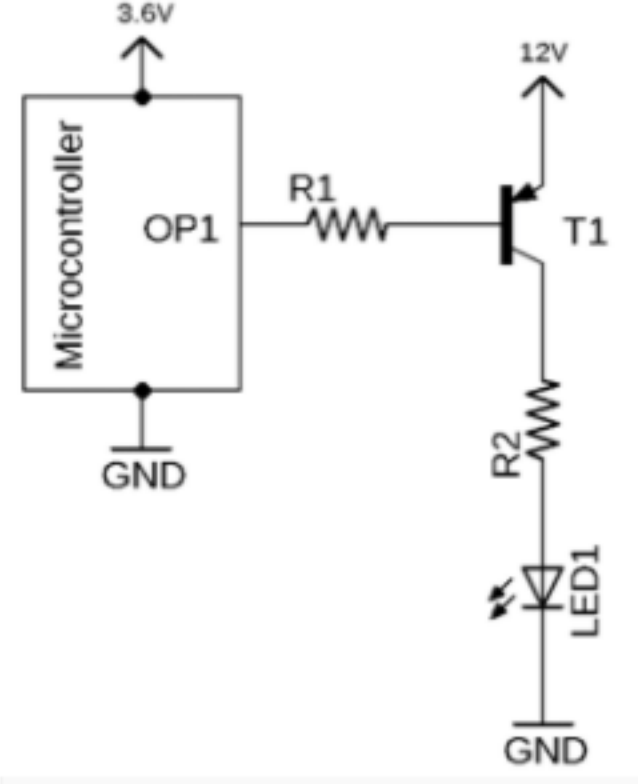
Unit 8 - Week 6

Course outline	
How does an NPTEL online course work?	
Week 0	
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	<input type="radio"/> Physical Interfacing -4 <input type="radio"/> Physical Interfacing -5 <input checked="" type="radio"/> Physical Interfacing -6 <input type="radio"/> Feedback Form <input type="radio"/> Quiz : Assignment 6
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Lecture PPT	
Download Videos	
Assignment Solutions	
Live Session	

Assignment 6

The due date for submitting this assignment has passed. **Due on 2020-10-28, 23:59 IST.**
 As per our records you have not submitted this assignment.

1) An LED is connected using a high-side switch to a microcontroller as shown in figure. What would be the problem in this type of configuration? **1 point**



- Logic '1' on OP1 will turn the LED OFF
- Position of R_2 is wrong, it should be towards the emitter side.
- The LED will never be turned off.
- Transistor will never go into saturation mode.

No, the answer is incorrect.
 Score: 0

Accepted Answers:
 The LED will never be turned off.

2) How many GPIO's of a microcontroller are required to control a time multiplexed type of display made using 7-segment displays? **1 point**

- 4 * no. of digits to be displayed
- 8 * no. of digits to be displayed
- 4 * no. of digits to be displayed.
- Depends on the type of 7-segment display (common anode or common cathode).

No, the answer is incorrect.
 Score: 0

Accepted Answers:
 8 * no. of digits to be displayed

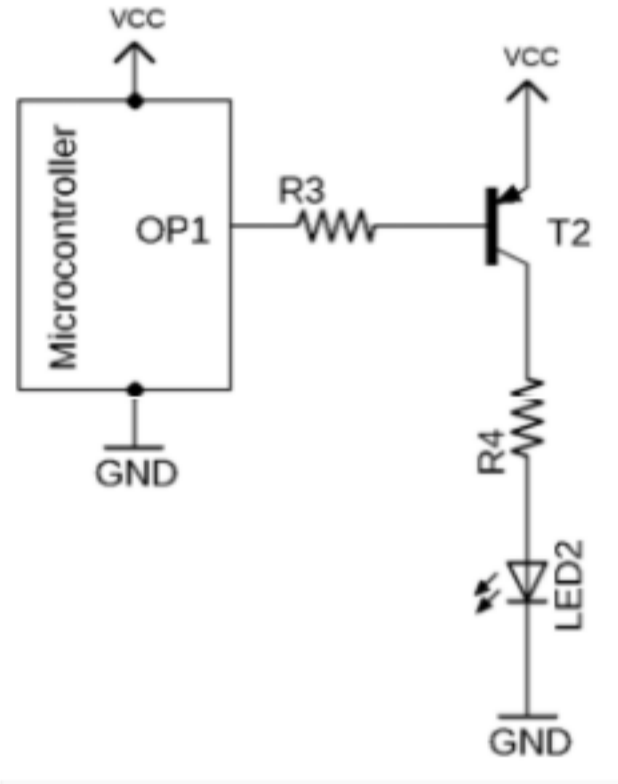
3) For a 6 digit display, made using common cathode type 7-segment displays (using time multiplexing technique), choose the CORRECT option. **1 point**

- It will require 52 pins to control the display.
- It will be controlled by 6 PNP transistors and 8 NPN transistors.
- It will require 48 pins to control the display.
- It will be controlled by 6 NPN transistors and 8 PNP transistors.

No, the answer is incorrect.
 Score: 0

Accepted Answers:
 It will be controlled by 6 NPN transistors and 8 PNP transistors.

4) For the given circuit, choose the correct options (VCC = 3.3V, LED2 is red LED, $R_4 = 330\Omega$, $R_3 = 1k\Omega$, T2 is BC547) **1 point**



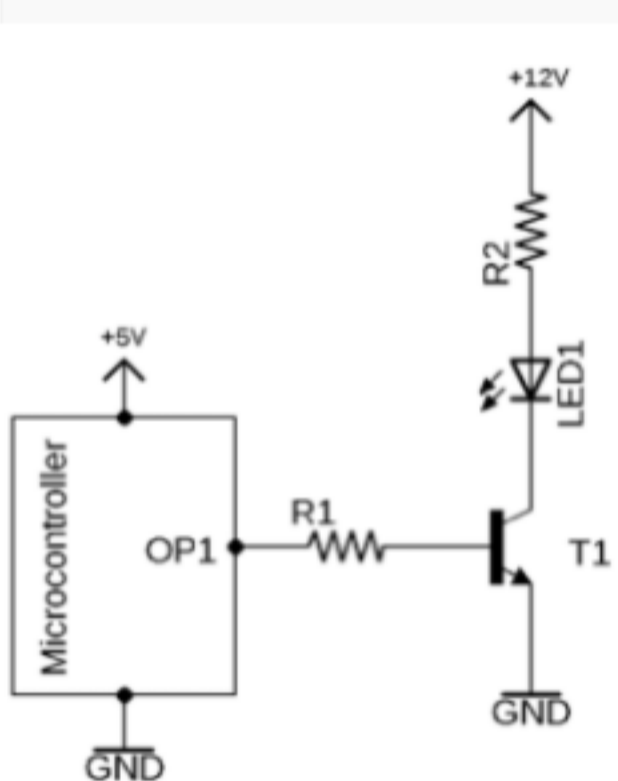
- LED will be always ON.
- Logic '1' on OP1 will turn the LED ON and Logic '0' will turn OFF.
- Logic '0' on OP1 will turn the LED ON and Logic '1' will turn OFF.
- LED will be always OFF.

No, the answer is incorrect.
 Score: 0

Accepted Answers:
 Logic '0' on OP1 will turn the LED ON and Logic '1' will turn OFF.

5) For the given circuit, find the values of R_1 and R_2 . Given : **1 point**

$\beta = 100$
 $V_{LED} = 2V$
 $I_{LED} = 25mA$
 $V_{CE(SAT)} = 0.2V$
 $V_{BE(SAT)} = 0.9V$
 $V_{CC} = 4.5V$
 (Take $I_B(sat) = (5 \cdot I_C) / \beta$)

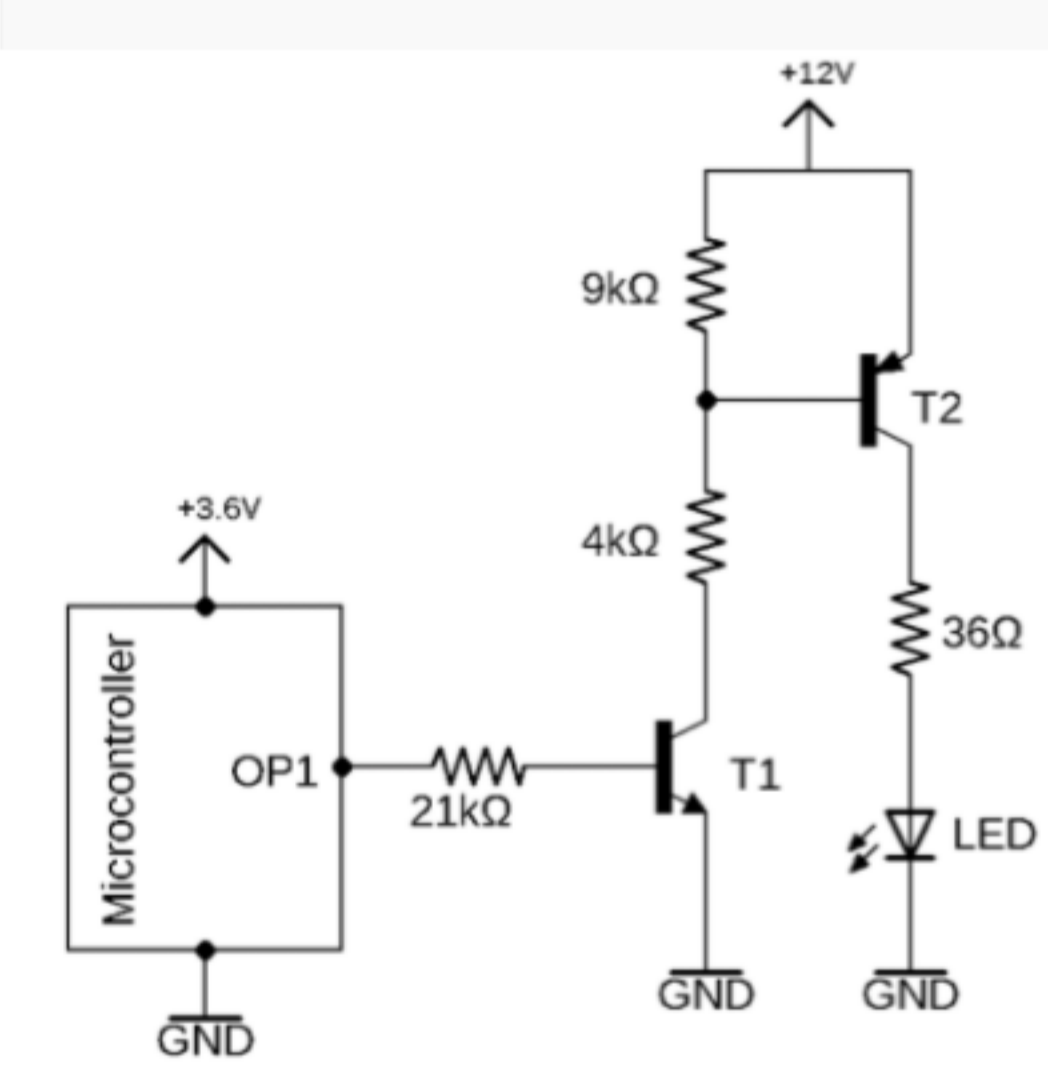


- $R_1 = 392k\Omega$ and $R_2 = 2.88\Omega$
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No, the answer is incorrect.
 Score: 0

Accepted Answers:
 $R_1 = 2.88k\Omega$ and $R_2 = 392\Omega$

6) Considering the circuit given below, mark the correct statements. **1 point**



- When LED is ON, T1 is in saturation mode & T2 is in cut-off mode.
- When LED is OFF, T1 is in cut-off mode & T2 is also in cut-off mode.
- When LED is ON, T1 is in saturation mode & T2 is also in saturation mode.
- When LED is OFF, T1 is in cut-off mode & T2 is in saturation mode.

No, the answer is incorrect.
 Score: 0

Accepted Answers:
 When LED is OFF, T1 is in cut-off mode & T2 is also in cut-off mode.
 When LED is ON, T1 is in saturation mode & T2 is also in saturation mode.

7) Which of the following statements are TRUE regarding a DC motor? **1 point**

- Its speed is inversely proportional to applied voltage.
- Its direction of rotation depends upon the polarity of applied voltage.
- Its speed is directly proportional to applied voltage.
- Its direction of rotation is independent of polarity of applied voltage.

No, the answer is incorrect.
 Score: 0

Accepted Answers:
 Its direction of rotation depends upon the polarity of applied voltage.
 Its speed is directly proportional to applied voltage.

8) For a given PWM signal, frequency is 10kHz and amplitude of voltage is 5V. What should be the value of t_{ON} to get an average output voltage of 1.25V? **1 point**

- 50μs
- 100μs
- 25μs
- 80μs

No, the answer is incorrect.
 Score: 0

Accepted Answers:
 25μs

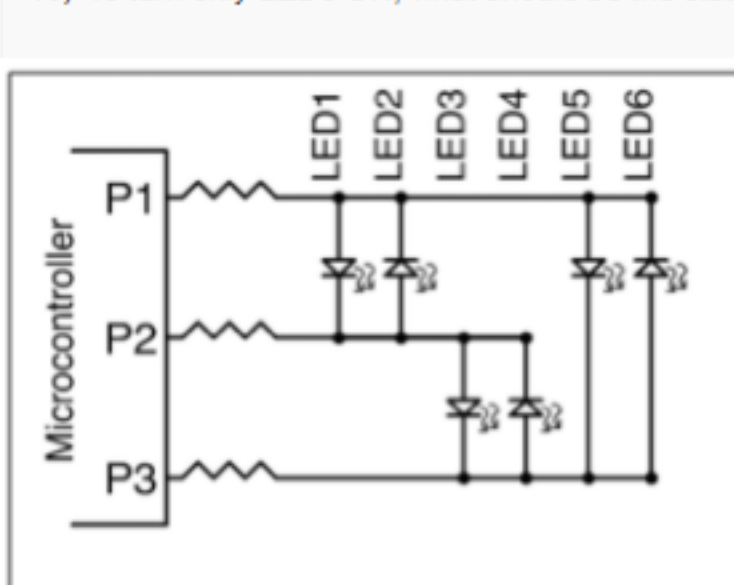
9) Speed of a DC motor operating at 15V was measured to be 2000 rad/sec. Now a PWM signal is applied to the same motor to get a speed of 400 rad/sec. If the voltage amplitude of the PWM signal is 5V, then what should be the value of duty cycle? **1 point**

- 60%
- 50%
- 80%
- 100%

No, the answer is incorrect.
 Score: 0

Accepted Answers:
 60%

10) To turn only LED3 ON, what should be the state of pins? **1 point**



- P1 = '1', P2 = '1', P3 = '1'
- P1 = '2', P2 = '1', P3 = '0'
- P1 = '2', P2 = '0', P3 = '1'
- P1 = '0', P2 = '1', P3 = '1'

No, the answer is incorrect.
 Score: 0

Accepted Answers:
 $P1 = '2', P2 = '1', P3 = '0'$