How many Motors **at most** which can be connected to L293D chip?

- 4 motors to rotate in two directions
- 1 motor to rotate on two directions
- 2 motors to rotate in one direction
- 6 motors to rotate in one direction
- 4 motors to rotate in one direction

Clear my choice

In input signal processing, to cancel the peaks on the high level which may burn the PIC, we can use:

- RC filter alone will solve it
- Schmit trigger alone will solve it
- Free wheeling diode will solve the problem
- Current limiting resistors with the clamping diodes will solve the problem
- RC filter with Schmit trigger will solve it

Clear my choice

Switch bouncing exists in all mechanical switches. Which of the following is correct regarding it?

- Bouncing time is for very short time and can't be noticed by eye. Therefore, it does not affect the logic of the program.
- Bouncing can be solved using RC filter with Schmit trigger
- Bouncing can be prevented by adding a clamping diode
- Bouncing can be solved by adding delay shorter than the bouncing time between every two consecutive readings of the switch
- Bouncing can be solved using interrupt

Which of the following sensors can be used to whether there is a close object or not? (1.5 minutes estimated time)

- Ultra sonic sensor
- motion sensor
- Microswitch
- Light dependent resistor
- Optical object sensing

Clear my choice

Which of the following settings can be used to connect 2 switches to RB0-RB1, 3 motors to RB2-RB4, and three sensors to RB5-RB7. (Estimated time 1.5 minutes)

- TRISB=B'1111 1000'
- TRISB=B'0001 1111'
- TRISB=B'0001 1100'
- TRISB=B'0000 0000'
- TRISB=B'1110 0011'

Clear my choice

Using the ADC in PIC 16F877A to obtain one sample of an analog signal connected to AN7. Assume the ADC clock to be Fosc/4 and voltage references to be external. Assume (RS=2 K Ohm, RSS = 6 KOhm, RIC=10KOhm, CHold=100 pF), and temperature 45 C. The result should be left justified. (Estimated Time 15 minutes)

a) What is the value of the ADCON0?

b) what is the value of ADCON1?

c) What is the sampling time in microseconds?

d) Assume repetitive sampling, if TAD= 2 microseconds, Taq=5 microseconds, quantization time = 20 microseconds, what is the maximum signal frequency that can be converted using this ADC?

Which of the following settings can be used to connect 4 switches to RB0-RB3, 2 motors to RB4-RB5, and 2 sensors to RB6-RB7. (Estimated time 1.5 minutes)

- TRISB=B'1111 1000'
- TRISB=B'0000 0000'
- TRISB=B'0011 0000'
- TRISB=B'1100 1111'
- TRISB=B'0011 1111'

If we want to connect a seven segment display, then we need 7 pins. How many pins are minimum needed to connect 5 seven segment displays which may display numbers between 00000 and 99999? (estimated time 1.5 minute).

- 13 pins only
- 7 pins only
- 12 pins only
- 35 pins minimum
- 11 pins only

Which interrupt is impossible to wakeup the microcontroller from sleep mode? (Estimated time 1.5 minutes)

- Timer 1 overflow interrupt
- End of ADC conversion interrupt
- Timer 2 overflow interrupt
- Port B change interrupt
- EEPROM write complete interrupt

Clear my choice

How many Tinst the following code needs to be fully executed? (estimated time 3 minutes)

```
        MOVLW     D'101'
        MOVWF     COUNTER
        NOP
        NOP
        GOTO      Loop
        NOP
Loop    NOP
        NOP
        DECFSZ    COUNTER, 1
        GOTO      Loop
```


- ○ 310
- ◉ 510
- ○ 260
- ○ 360
- ○ 460
- ○ 410

Clear my choice

When connecting a motor to the PIC, which of the following statements is **incorrect**? (estimated time 1.5 minutes)

- There is no way to interface the motor to a PIC
- We may use L293D (H-Bridge) to drive the motor by external power supply
- We may use MOSFET to drive the motor by external power supply
- We may use transistor to drive the motor by external power supply
- Motors usually need high power, the PIC may drive them but not efficiently. Therefore, it is better to connect the motor to an external power source.

Clear my choice