

## **Sample Pre-Lab Quiz Questions for Expt 04**

Duration: 10 min; Max marks: 5 marks

### **Q1 Mark all statements which are correct:**

An Arduino Nano/Uno card can be powered

- i) through its USB port from a computer.
- ii) by giving 9V to Aref pin
- iii) by giving a voltage between 7 and 12 V to the Vin pin
- iv) by connecting the output of a 9V wall plug DC source to A0 pin
- v) by connecting a DC source of 7 to 12 V to the Rx pin
- vi) by connecting a DC source of 7 to 12 V to the Tx pin

### **Q2 Pulse width modulation (PWM) can be used to control the duty cycle of the output. On an Arduino Nano/Uno board, PWM output is available on**

- i) all digital output pins D0-13.
- ii) all Analog pins A0 to A5.
- iii) selected Digital output pins.
- iv) serial I-O pins Tx and Rx.

### **Q3 Mark all statements which are correct.**

- i) The USB port is used to supply power to the Nano/Uno board.
- ii) The program binary can be loaded into the flash memory using the USB interface.
- iii) Data output from the microcontroller can be sent to the PC using the USB interface.
- iv) The USB interface is used on the Nano/Uno boards to read programs from a USB drive.
- v) The USB interface is used on the Nano/Uno boards to read data files from a USB drive.

### **Q4 Mark all statements which are correct.**

- i) We put a capacitor across BO motor terminal to cancel the inductance of motor windings.
- ii) A capacitor is soldered across the BO motor terminals to suppress noise.
- iii) A B.O. motor can be driven directly from the digital outputs of Arduino.

- iv) The 5V regulator on the motor driver card is used to drive the motor from a steady voltage.
- v) The 5V regulator on the motor driver board is used to power the digital circuits on the controller.

**Q5 Mark all statements which are correct.**

- i) The on-board ADC controller has 8 bit resolution.
- ii) The on-board ADC controller has 10 bit resolution.
- iii) Output of the ADC controller can be used directly to control the PWM duty cycle
- iv) Output of the ADC controller should be mapped onto 8 bit range before using it as the PWM value.
- v) AnalogWrite statement outputs an analog voltage on pins A0-A5
- vi) AnalogWrite statement outputs pulse width modulated output on selected digital pins