10 Write an Embedded C program for Generation of PWM Signal to vary the speed of DC motor using PIC controller PWM Mode(Duty cycle :25%,50%,75%,100%). (Answer sheet : draw interfacing diagram Draw T2CON & CCP1CON Register ,Show calculations & Write code ) (Simulate using Proteous & Perform on PIC18 Kit)

#include <xc.h>

#include<p18f452.h>

#pragma config OSC=HS

#pragma config PWRT=OFF

#pragma config WDT=OFF

void DELAY(unsigned int);

void main()

{

TRISCbits.RC6 = 0; // Set PORTC, RC6 as output (DCM IN1)

TRISCbits.RC7 = 0; // Set PORTC, RC6 as output (DCM IN2)

TRISCbits.RC2=0; ///RC2 pin as PWM output pin

PR2=249; ////PR2=(Fosc/4xNxFpwm)

CCP1CON = 0x0C; // Configure CCP1CON as PWM mode.

T2CON = 0x07; // Start timer 2 with prescaler 1:16

PORTCbits.RC6 = 1; // Turn ON the Motor

PORTCbits.RC7 = 0;

while(1) ///forever loop

{

CCPR1L=62; //25% Duty cycle

CCP1CON=0X1C; ///PWM mode, DCB1:DCB0=0.25 Decimal points

DELAY(10);

CCPR1L=124; //50% Duty cycle

CCP1CON=0X2C; ///PWM mode, DCB1:DCB0=0.50 Decimal points

DELAY(10);

CCPR1L=186; //75% Duty cycle

CCP1CON=0X3C; ///PWM mode, DCB1:DCB0=0.75 Decimal points

DELAY(10);

CCPR1L=249; //100% Duty cycle

CCP1CON=0X0C; ///PWM mode, DCB1:DCB0=0.00 Decimal points

DELAY(10);

TMR2=0x00; // Initially load TMR2=00H

PIR1bits.TMR2IF=0; //Clear interrupt flag

T2CONbits.TMR2ON=1; //start timer 2

while(PIR1bits.TMR2IF==0); ///monitor TMR2 interrupt flag

}

}

void DELAY (unsigned int time) // Definition of delay subroutine

{

unsigned int i, j;

for (i = 0; i < time; i++) // Loop for time

for (j = 0; j < 710; j++);// Calibrated for a 1 ms delay in MPLAB

}

