Seat
No.

T.E. (Electrical) (Semester – I) Examination, 2014
ADVANCED MICROCONTROLLER AND ITS APPLICATIONS
(2012 Course)

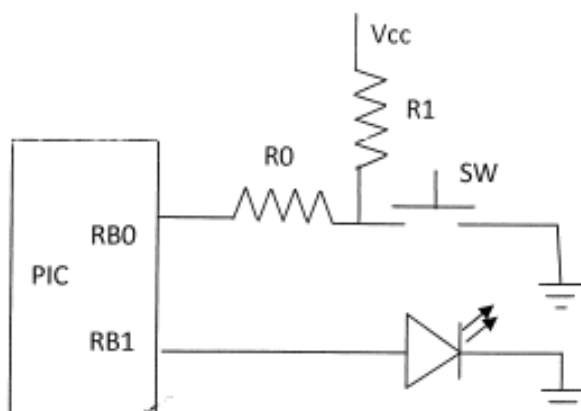Time : 3 Hours   Max. Marks : 70

Instructions : *1) Answer **all** questions.*
*2) Neat diagrams must be drawn **wherever** necessary.*
*3) Figures to the **right** side indicate **full** marks.*
*4) **Use** of calculator is **allowed**.*
*5) Assume suitable data if **necessary**.*

1. a) Compare Harvard and Van Neumann architecture.   **7**

   b) Explain any three addressing modes of PIC 18 with one example each.   **6**

   c) Write an assembly program using the timer1 interrupt to create a square wave of 3 KHz on pin RB7. Assume XTAL = 10 MHz.   **7**

                               OR

2. a) Explain the status register of PIC 18 microcontroller.   **6**

   b) Write an assembly language program to add the constant AAH to the contents of file reg 0 × 36 and store the result in file reg 0 × 40.   **7**

   c) Explain different I/O ports and associated SFRs of PIC 18F458.   **7**

3. a) A LED is connected to port pin RBI and a switch (SW) is connected to RB0 as shown in figure. Write a program which will continuously monitor status of port pin RB0 and switch on LED when the switch is closed.   **8**

   b) Explain the functions of pins associated with LCD (16 × 2) and draw a flowchart for outputting data on LCD.   **8**

                               OR

4. a) Write a program to transfer a letter 'A' serially and continuously at a baud rate of 9600. Assume crystal frequency of 10 MHz. **8**

   b) Write a short note on SPI protocol. **8**

5. a) Explain compare mode of operation of PIC 18 and also explain SFR CCP1 CON register in detail. **8**

   b) Using compare mode, write the assembly language program to toggle the LED every 10 pulses. Use Timer 1 as counter. **8**

                   OR

6. a) Create a 2 KHz PWM frequency with 25% duty cycle on the CCP1 pin. Assume XTAL = 10 MHz. **8**

   b) Explain PIC 18 connection to the stepper motor and write the code to rotate continuously in anticlockwise direction. **8**

7. a) Explain features of on-board ADC and the following SFR's in detail ADCON1 ADCON 0. **9**

   b) Show interfacing of LM35 with PIC 18F458. Write a program to measure and display temperature. **9**

                   OR

8. a) Explain how current is measured using PIC 18F458. Write a program to measure current and display result in PORT D. **9**

   b) Explain with a neat diagram, interfacing of DAC with PIC microcontroller and write a program for sawtooth waveform generation using DAC. **9**

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