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Question Paper Code: X11273

B.E./B.Tech. DEGREE EXAMINATIONS APRIL / MAY 2021

Eighth Semester

Electrical and Electronics Engineering

EE8018 Microcontroller based System Design

(Regulations 2017)

Time : 3 Hours

Answer ALL Questions

Max. Marks: 100

PART-A (10 x 2 = 20 Marks)

1. Recall the differences between Indirect and bit-direct addressing mode of PIC microcontroller.
2. List the various groups of instruction set in PIC micro controller?
3. What are the features of timer 0?
4. Multiply the following two unsigned bytes 81H and 04H and save the result in registers 10H and 11H respectively.
5. Define baud rate.
6. State the need for gate signals in converters?
7. Indicate the various level of accuracy in ARMULATOR.
8. Recall the important features of ARM processor
9. What is co-processor interface in ARM processor?
10. List out the different stages in five stage pipeline hierarchy in ARM.

PART- B (5 x 13 = 65 Marks)

11. a) Elaborate the objectives, structure, assembler directives of PIC-Assembly language programming. (13)

OR

- b) Explain about the Architecture of PIC 16C7X with necessary diagrams. (13)

12. a) Give detailed note on state machines and key switches in PIC microcontroller. (13)
- OR
- b) What is the importance of Interrupt? Explain the interrupt structure of PIC microcontroller with neat diagram. (13)
13. a) Describe about PIC interfacing with peripherals that includes sensors, ADC, DAC and keyboard with neat sketches. (13)
- OR
- b) Discuss in detail about I²C bus and serial EEPROM. (13)
14. a) Explain about memory hierarchy in ARM processor with neat sketches (13)
- OR
- b) With neat sketch, explain the functional block diagram of ARM architecture (13)
15. a) Explain the various instruction set of ARM processor with examples (13)
- OR
- b) Explain how ARM instruction execution done in ARM processor. (13)

PART C (1 x 15 = 15 Marks)

16. a) Develop a suitable algorithm to turn ON pin PORTB4, when TMR2 reaches value 100(decimal). Assuming that XTAL = 10 MHz in PIC16C7X (15)
- OR
- b) Propose a Home automation system using PIC microcontroller to monitor humidity & temperature and control the Air conditioner based on the following conditions:
- i. If the humidity level is less than 30% and room temperature is greater than 320 c , turn on LED to indicate the temperature is high and humidity is low and display the message “AC turned ON” on the LCD display.
 - ii. If the humidity level is greater than 30% and room temperature is lesser than 320 c , turn off LED to indicate the temperature is low and humidity is high and display the message “ AC Turned OFF” on the LCD Display. (15)
