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Question Paper Code : 30153

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Fourth Semester

Electrical and Electronics Engineering

EE 3404 – MICROPROCESSOR AND MICROCONTROLLER

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Expand (a) PC (b) SP (c) ALU (d) ALE
2. Find the maximum external memory that shall be interfaced with 8085 which has 16-bit address lines.
3. Why subroutine is called so?
4. State any two applications of look up table.
5. Discuss the capabilities of 8251 USART chip.
6. Name the registers used to program and control the operation of IC 8259PIC.
7. Mention the role of stack pointer in using stack.
8. Define IDE.
9. Compare CISC with RISC.
10. List any four special features of PIC controller.

PART B — (5 × 13 = 65 marks)

11. (a) Explain the software and hardware interrupts available in 8085 along with their vector addresses.

Or

- (b) Draw and explain the timing diagram of (i) Memory read machine cycle and (ii) Memory write cycle of 8085.

12. (a) List and define the addressing modes supported by 8085 microprocessor with examples.

Or

- (b) State the data manipulation instructions in 8051 microprocessor and mention their functions.

13. (a) With neat diagram, Explain the architecture and interfacing of 8255 PPI.

Or

- (b) Draw the internal block diagram of 8279 keyboard display controller and explain its features.

14. (a) Explain the various operating modes of 8051 timer and special function registers associated with timer/counter.

Or

- (b) Explain the structure of port 0 and port 3 of 8051 microcontroller.

15. (a) Draw the architecture and list the major functional elements of PIC microcontroller.

Or

- (b) Mention the instructions of PIC microcontroller and their functions.

PART C — (1 × 15 = 15 marks)

16. (a) For an industrial application, it is required to generate sinusoidal waveform. Interface D/A Converter with 8085 and develop an algorithm and Assembly Language Program to generate the sinusoidal waveform continuously.

Or

- (b) A simple robot arm is created using stepper motor and controlled by 8051 microcontroller. Draw the interfacing diagram and develop algorithm and program to run the stepper motor in clockwise direction for 60 degrees. Assume suitable step angle.