5E1364

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B. Tech. V - Sem. (Main / Back) Exam., January - 2022
Electrical & Electronics Engineering
5EX4 – 04 Microprocessor
EE, EX

Time: 3 Hours

Maximum Marks: 120
Min. Passing Marks: 42

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL   2. NIL

PART – A

(Answer should be given up to 25 words only)   [10×2=20]

All questions are compulsory

Q.1   What does the term Embedded System mean?

Q.2   What is the drawback of Memory Mapped I/O?

Q.3   List the benefits of subroutine.

Q.4   How is the A/D converter interfaced with 8051 microcontroller?

Q.5   Give four differences between Static and Dynamic RAM.

Q.6 Why are AD0-AD7 lines are multiplexed?

Q.7 What are the different types of Addressing modes in 8051?

Q.8 Differentiate between 16-bit & 32-bit microcontrollers.

Q.9 Draw the block diagram of 8051 microcontroller and labeled it properly.

Q.10 Differentiate between Timers and Counters. Draw the diagram of TCON in 8051.

PART – B

(Analytical/Problem solving questions)   [5×8=40]
Attempt any five questions

Q.1 What is the use of Stack? Explain "PUSH" and "POP" operations with the help of suitable examples.

Q.2 Briefly describe the key features of Synchronous and Asynchronous communication.

Q.3 Elaborate the instructions set in 8051 microcontroller with the help of examples.

Q.4 Draw the T-states and Machine cycles for the following instructions –

    (a)   CMP

    (b)   STAX

    (c)   LDA

    (d)   STA

Q.5 Explain various timers and interrupts and their functions in 8051 microcontroller.

Q.6 Explain the interfacing of Analog to Digital and Digital to Analog converter with 8051 microcontroller.

Q.7 Show the interfacing circuit and functional pins of LCD.

PART – C

Q.1 A binary coded decimal number between 0 and 99 is stored in R/W memory location called the "Input Buffer" (INBUF). Write a main program and a conversion subroutine (BCDBIN) to convert BCD number into its equivalent binary number. Store the result in a memory location defined as the output buffer (OUTBUF).

Q.2 Draw and explain the architecture of 8051 Microcontroller. Give PSW of 8051 Microcontroller and describe each bit in PSW.

Q.3 With the help of schematic diagram, explain the interfacing of stepper motor with 8051 Microcontroller. Also write ALP to change the speed and direction of motor.

Q.4 Draw the pin diagram of programmable peripheral interface chip 8255 and explain its various operational modes.

Q.5 Write an assembly language program to perform traffic light control operation.