| Reg.No.: | | | | | | | | | | | | |
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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

**Question Paper Code: 80007**

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Fifth Semester
Electrical and Electronics Engineering
U19EE516 – MICROPROCESSORS AND MICROCONTROLLERS
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

| Knowledge Levels (KL) | K1 – Remembering | K3 – Applying | K5 - Evaluating |
|---|---|---|---|
| | K2 – Understanding | K4 – Analyzing | K6 - Creating |

PART – A

(10 x 2 = 20 Marks)

| Q.No. | Questions | Marks | KL | CO |
|---|---|---|---|---|
| 1. | When the 8085 processor checks for an interrupt? | 2 | K2 | CO1 |
| 2. | List the flags of 8085. | 2 | K2 | CO1 |
| 3. | Write a program to transfer a block of data from one location to the other. | 2 | K2 | CO2 |
| 4. | What is the need for timing diagram? | 2 | K2 | CO2 |
| 5. | List the significance of stack pointer. | 2 | K1 | CO3 |
| 6. | Give the purpose of ALE/PROG signal. | 2 | K1 | CO3 |
| 7. | How is A/D convertor interfaced with 8051? | 2 | K1 | CO4 |
| 8. | List the operating modes of 8255A. | 2 | K1 | CO4 |
| 9. | Compare the basic difference between a timer and a counter. | 2 | K2 | CO5 |
| 10. | Classify the various types of sensors that can be interfaced with 8051. | 2 | K2 | CO5 |

## PART – B

(5 x 13 = 65 Marks)

| Q.No. | | Questions | Marks | KL | CO |
|---|---|---|---|---|---|
| 11. | a) | Explain briefly about the bus structure of 8085. | 13 | K1 | CO1 |
| | | (OR) | | | |
| | b) | Draw and explain the architecture of 8085 microprocessor. | 13 | K1 | CO1 |
| 12. | a) | Write an assembly language program to add or subtract two 8 bit numbers. | 13 | K2 | CO2 |
| | | (OR) | | | |
| | b) | Write an assembly language program to multiply and divide two 8 – bit numbers. | 13 | K2 | CO2 |
| 13. | a) | Explain the Data transfer instructions and Program control instructions of 8051 microcontroller. | 13 | K1 | CO3 |
| | | (OR) | | | |
| | b) | Write an 8051 ALP to create a square wave of 66% duty cycle on bit 3 of port 1. | 13 | K1 | CO3 |
| 14. | a) | With neat sketch explain the functions of 8254. | 13 | K1 | CO4 |
| | | (OR) | | | |
| | b) | What is DMA? Explain the DMA based data transfer using DMA controller. | 13 | K1 | CO4 |
| 15. | a) | Illustrate the suitability of microprocessors and microcontrollers for a process control or a machine tool applications and hence explain the same. | 13 | K2 | CO5 |
| | | (OR) | | | |
| | b) | With architectural schematics, explain how the microprocessor and microcontrollers are functionally different from the computer based controllers. | 13 | K2 | CO5 |

## PART – C

(1 x 15 = 15 Marks)

| Q.No. | | Questions | Marks | KL | CO |
|---|---|---|---|---|---|
| 16. | a) | Draw the block diagram to interface a stepper motor with 8051 microcontroller and explain the same. Write a 8051 assembly language program to run the stepper motor in both forward and reverse direction with delay. | 15 | K3 | CO5 |
| | | (OR) | | | |
| | b) | Design the interfacing of a 8051 based traffic light control system with necessary timing diagram, and hence explain the same. | 15 | K3 | CO5 |