B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Fifth Semester

Computer Science and Engineering

(Common to Information Technology)

20ESEC502 - MICROPROCESSORS AND MICROCONTROLLERS

Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)
Answer ALL Questions

		Marks	K–Level	CO

1. The instruction MOV DL,08H is an example of which addressing mode of 8086 Microprocessor? — 1, K1, CO1
   a) Immediate   b) Register   c) Direct   d) Indirect

2. _____register is used to hold data for multiplication and division operations. — 1, K1, CO1
   a) data   b) base   c) Source Index   d) Destination Index

3. _____is the input signal that provides the basic timing for 8086 — 1, K1, CO2
   a) CLK   b) HOLD   c) HLDA   d) RESET

4. The _____memory is used to store permanent programs and data — 1, K1, CO2
   a) FLASH   b) EEPROM   c) RAM   d) ROM

5. Select the purpose of the instruction int 21h? — 1, K1, CO3
   a) To read a character from the keyboard.   b) To display a character on the monitor.
   c) To terminate the program.   d)a or b

a. What is the purpose of password validation in 8086 assembly language programming? — 1, K1, CO3
   a) To restrict access to a program   b) encrypt data
   c) To decrypt data   d) To display a message

7. Which port of the 8255 PPI is capable of performing the handshaking function with the interfaced devices? — 1, K1, CO4
   a) Port A   b) Port B   c) Port C   d) All of the above

8. In which mode, the CPU periodically reads an internal flag of 8279 to check whether any key is pressed or not with key pressure? — 1, K1, CO4
   a) Interrupt mode   b) Polled mode   c) Decoded Mode   d) Encoded Mode

9. When the microcontroller executes some arithmetic operations, then the flag bits of which register are affected? — 1, K1, CO5
   a) PSW   b) SP   c) DPTR   d) PC

10. The traffic light control system has _____for stack operations — 1, K1, CO6
    a) ROM   b) RAM   c) External memory   d) EEPROM

PART - B (12 × 2 = 24 Marks)
Answer ALL Questions

11. What is the need for a flag register in 8086? — 2, K1, CO1

12. Interpret the physical address, when segment address is 1085H and effective address is 4537H. — 2, K2, CO1

13. State the use of Ready pin. — 2, K1, CO2

14. Compare the Minimum mode and Maximum mode. — 2, K2, CO2

15. Define modular programming. — 2, K1, CO3

16. What is the main difference between string reversal and string rotation? — 2, K2, CO3

17. List the features of DMA controller. — 2, K1, CO4

18. Define USART. — 2, K1, CO4

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **14024**

19.	Show the ports used as a multifunction port and list the signals.	2	K2	CO5
20.	List the functions supported by SFR of 8051.	2	K1	CO5
21.	Compare the LED and LCD display.	2	K2	CO6
22.	How to change the stepper motor direction?	2	K2	CO6

PART - C (6 × 11 = 66 Marks)
Answer ALL Questions

23.	a)	Explain the functional Units of 8086 in detail.	11	K2	CO1
		OR			
	b)	Define addressing mode and explain in detail about each addressing mode with an example.	11	K2	CO1
24.	a)	What is an assembler directive? Explain assembler directives with an example.	11	K2	CO2
		OR			
	b)	With the help of a timing diagram, explain the Read and Write cycle in maximum mode operation of the 8086 microprocessor.	11	K2	CO2
25.	a)	Build an Assembly Language program to reverse a string with algorithm and manual calculation.	11	K3	CO3
		OR			
	b)	Develop an assembly language program in 8086 to search the largest and smallest data in the array.	11	K3	CO3
26.	a)	Point out the features and explain the operation of 8254 Programmable Interval Timer with diagram, and also explain.	11	K3	CO4
		OR			
	b)	Explain the Functional diagram of Programmable Interrupt Controller in detail.	11	K3	CO4
27.	a)	Build the functional block diagram of 8051 with a neat sketch.	11	K3	CO5
		OR			
	b)	Apply the addressing modes of 8051 Microcontroller with suitable examples.	11	K3	CO5
28.	a)	Design the interfacing of 8051/8086 based traffic light control system with necessary diagram.	11	K3	CO6
		OR			
	b)	Develop the interfacing circuit of an LCD display with 8051/8086.	11	K3	CO6

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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