Reg. No.															

Question Paper Code	13668

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Fifth Semester

Electronics and Communication Engineering

(Common to Computer Science and Engineering & 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.	Identify the memory unit where a microprocessor can operate on any information only if it is present in _____. (a) Program counter (b) Flag (c) Main memory (d) Secondary memory	1	K1	CO1
2.	Find the number of address lines required to access a memory location out of N memory locations. (a) log N (to the base 2) (b) log N (to the base 10) (c) log N (to the base e) (d) log (2N) (to the base e)	1	K1	CO1
3.	Recognize the assembler directive that starts the memory allotment for a specific segment or block from a declared address. (a) OFFSET (b) LABEL (c) ORG (d) GROUP	1	K1	CO2
4.	Identify which part of the bus is decoded to generate the chip select signal. (a) Data (b) Address (c) Control bus (d) Both (a) and (b)	1	K1	CO2
5.	Recall the benefits of assembly-level programming. (a) Flexibility of programming is more (b) The chances of error are less (c) Debugging is easy (d) All of the mentioned	1	K1	CO3
6.	Identify the file extension required for LINK to accept it as a valid object file. (a) OBJ file (b) EXE file (c) MASM file (d) DEBUG file	1	K1	CO3
7.	Find how Port C of 8255 can function independently. (a) Input port (b) Output port (c) Either input or output ports (d) Both input and output ports	1	K1	CO4
8.	Identify the registers that hold the address of the word currently being written by the CPU from the display RAM. (a) Control and timing register (b) Control and timing register and timing control (c) Display RAM (d) Display address registers	1	K1	CO4
9.	When 8051 wakes up, then 0x00 is loaded into which register? (a) PSW (b) SP (c) PC (d) None of the mentioned.	1	K1	CO5
10.	Select the correct option: The optical properties of liquid crystals depend on the direction of _____. (a) Air (b) Solid (c) Light (d) Water.	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Define the program counter and accumulator.	2	K1	CO1
12.	Compare a microprocessor to a microcontroller.	2	K2	CO1

13.	Draw the pin diagram of the 8086 microprocessor.	*2*	*K1*	*CO2*
14.	State the instructions used for arithmetic operations.	*2*	*K1*	*CO2*
15.	Mention the advantages of password validation.	*2*	*K1*	*CO3*
16.	Convert the binary number 1110 to its ASCII representation.	*2*	*K2*	*CO3*
17.	List the applications of the 8253 programmable timers.	*2*	*K1*	*CO4*
18.	State the concept of a programmable keyboard.	*2*	*K1*	*CO4*
19.	Define addressing modes of the 8051 microcontroller.	*2*	*K1*	*CO5*
20.	Differentiate between Intel Pentium IV and Intel Core i7 processors.	*2*	*K2*	*CO5*
21.	Define the importance of interfacing with peripherals.	*2*	*K1*	*CO6*
22.	Write an assembly language program (ALP) for serial port communication.	*2*	*K1*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Analyze the functional blocks of the 8086 microprocessor architecture in detail.	*11*	*K4*	*CO1*
		OR			
	b)	Elaborate on the different types of addressing modes used in the 8086 microprocessor with suitable examples.	*11*	*K4*	*CO1*
24.	a)	Demonstrate the various types of instruction sets used for different operations in the 8086 microprocessor.	*11*	*K3*	*CO2*
		OR			
	b)	Construct and draw the timing diagram for read and write operations in a microprocessor.	*11*	*K3*	*CO2*
25.	a)	Illustrate an ALP to rotate a byte three places to the left and convert it to an uppercase letter using the 8086 microprocessor.	*11*	*K2*	*CO3*
		OR			
	b)	Explain the concept of modular programming for keyboard and video display in detail.	*11*	*K2*	*CO3*
26.	a)	Describe the interfacing of the programmable peripheral 8255 using the 8086 microprocessor with a neat diagram.	*11*	*K2*	*CO4*
		OR			
	b)	Interpret the interfacing of the programmable interrupt controller 8259 using the 8086 microprocessor in detail.	*11*	*K2*	*CO4*
27.	a)	Explain the architecture of the Intel 8051 microcontroller with a neat block diagram.	*11*	*K2*	*CO5*
		OR			
	b)	Outline the concept of special function registers in the 8051 microcontroller in detail.	*11*	*K2*	*CO5*
28.	a)	Design a traffic light control system using the 8086 microprocessor with a neat sketch.	*11*	*K3*	*CO6*
		OR			
	b)	Demonstrate the operation of a stepper motor control system using the 8051 microcontroller in detail with a neat diagram.	*11*	*K3*	*CO6*