

Hall Ticket Number:

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Code No. : 13264 N/O

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD*Accredited by NAAC with A++ Grade***B.E. (CSE & AIML) III-Semester Main & Backlog Examinations, Jan./Feb.-2024****Microprocessors, Microcontrollers & Interfacing**

Time: 3 hours

Max. Marks: 60

*Note: Answer all questions from Part-A and any FIVE from Part-B**Part-A (10 × 2 = 20 Marks)*

Q. No.	Stem of the question	M	L	CO	PO
1.	Differentiate between minimum mode and maximum mode operation of 8086 microprocessor.	2	2	1	1,2
2.	Calculate the physical address of the instruction by considering the code segment CS: 6600h and offset address: 4050h.	2	3	1	1,2,3
3.	Write an assembly language program to demonstrate any four addressing modes of 8086 microprocessor.	2	3	2	1,2,3
4.	List any eight assembler directives.	2	1	2	1
5.	Match the following: a) 8255 [] 1) Keyboard and display controller b) 8279 [] 2) DMA controller c) 8259 [] 3) Programmable Peripheral Interface d) 8257 [] 4) Programmable Interrupt controller 5) Programmable Communication Interface	2	2	3	1,2
6.	Register AX has 5000h, Register BX holds 6200h and CY = 1. Write the output after executing the following set of mnemonics: a) ROL AX, 02h b) ADC AX, Bx	2	3	3	1,2,3
7.	Is the instruction MOV R4, R7 is valid? Justify your answer.	2	2	4	1,2,3
8.	Differentiate between a microprocessor and a microcontroller.	2	2	4	1,2
9.	What is a sensor? List the different types of sensors.	2	1	5	1
10.	What is Node MCU? Write the role of it.	2	1	5	1
Part-B (5 × 8 = 40 Marks)					
11.a)	Explain data transfer instructions of 8086 microprocessor. Give an example for each.	4	1	1	1,2
b)	Write an assembly language program to find the sum of n 8-bit numbers. The value of n is stored at location 1000H. The n 8-bit numbers are stored from 1001H onwards.	4	3	1	1,2,3

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12. a)	Explain the following with an example for each: i) Procedure ii) Macro. iii) CMP instruction.	4	1	2	1
b)	Write 8086 instructions for implementing the following program structure. If $a > b$ then $c = a - b$ Else $c = b - a$	4	3	2	1,2,3
13. a)	Draw and explain the internal block diagram of Programmable Interrupt Controller (8259A).	4	2	3	1,2
b)	Calculate the output voltage range of a 4-bit DAC if the output voltage is +5.5 V for an input of 0000 and +7.5 V for an input of 1111.	4	3	3	1,2,3
14. a)	With the help of a neat diagram, explain the architecture of 8051 microcontroller.	4	2	4	1,2
b)	Write an assembly language program to transfer 10 bytes of data block by block, starting from 60h of internal RAM location to another memory location starting from 70h using 8051 microcontroller.	4	3	4	1,2,3
15. a)	Give the interfacing diagram of a stepper motor with 805-microcontroller. Explain.	4	2	5	1,2,3
b)	Write an 8051 assembly language program for rotating a stepper motor in clock wise direction.	4	3	5	1,2,3
16. a)	What is pipeline architecture? With the help of a neat diagram, explain the pipelining support in the architecture of 8086 microprocessor.	4	2	1	1,2
b)	Write an assembly language program to find the factorial of a give number using Procedures.	4	3	2	1,2,3
17.	Answer any two of the following:				
a)	How to interface standard display unit with 8086 microprocessor.	4	2	3	1,2,3
b)	Explain any 4 instructions of 8051 microcontroller.	4	2	4	1,2
c)	Write a short note on ARM processor.	4	1	4	1

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level - 1	20%
ii)	Blooms Taxonomy Level - 2	40%
iii)	Blooms Taxonomy Level - 3 & 4	40%
