

Hall Ticket Number:

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Code No. : 14222

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. (C.S.E: CBCS) IV-Semester Main Examinations, January-2021**  
**Microprocessors, Microcontrollers & Interfacing**

Time: 2 hours

Max. Marks: 60

*Note: Answer any NINE questions from Part-A and any THREE from Part-B*

**Part-A (9 × 2 = 18 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	Write the functionality of LOCK and WAIT instructions in 8086 Microprocessor?	2	2	1	1,2
2.	Draw the flag register structure of 8086 Microprocessor	2	2	1	1,2
3.	Write the functionality of the following assembler directives i) ASSUME ii) ORG iii) EQU iv) SEGMENT	2	2	2	1,2
4.	Write the steps when 8086 responds to an interrupt?	2	3	2	1,2
5.	Draw the control word register of 8255(PPI)?	2	2	3	1,2
6.	Write the importance of DMA in data transfer between Processor and I/O devices	2	2	3	1,2
7.	Draw the flag register structure of 8051 microcontroller?	2	2	4	1,2
8.	The RAM memory location 20H has FEH and CY has 1H then find out the results from following code: MOV A,@20H RLC A,#04H RR A,#05H	2	3	4	1,2,3
9.	Find the contents of the flag register in 8051 after adding the binary numbers 10101010 and 11001101. Draw the structure of PSW.	2	3	5	1,2,3
10.	Assuming that XTAL=11.0592 MHz, Write an ALP of 8051 to generate a square wave of 1KHz frequency on P2.2.	2	3	5	1,2,3
11.	Identify the syntax errors in the following instructions? i) MOV BH,AX ii) MOV 7632H,CX ii) IN BL,04H iv) ADD AL,2073H	4	3	1	1,2,3
12.	What is a vectored interrupt? Give an example	4	2	2	1,2
<b>Part-B (3 × 14 = 42 Marks)</b>					
13. a)	Draw the 8086 Microprocessor Architecture and Justify how the 8086 Microprocessor speed is high when it is operating in the Maximum mode than compare to the minimum mode?	10	3	1	1,2,3
b)	If the memory chip size is 1024 x 4 bits, how many chips are required to make up 2K (2048) bytes of memory?	4	3	1	1,2,3

14. a)	What is interrupt? Explain different types of interrupts. Explain ISR?	10	2	2	1,2
b)	Write an assembly language program to convert $(7F)_{16}$ to $(?)_{10}$	4	3	2	1,2,3
15. a)	Draw and explain 8255 PPI and its modes of operation in detail?	7	2	3	1,2
b)	An 8086 has a DMA controller 8257 interfaced such that address of its mode set register is 'F8H' and address of its DMA register of channel 'O' is 'FOH'. Write an ALP to read 2KB of data from location 5000H: 2000H in the memory to a peripheral device on channel of DMA controller. Disable all other channels, program TC stop, No auto load is required. Use fixed priority.	7	3	3	1,2,3
16. a)	Draw the architecture of 8051 microcontroller with a neat sketch and explain the RAM and ROM organization	7	2	4	1,2
b)	Write an Assembly language program to display "WELCOME" string from left to right on LCD display unit using 8051 Microcontroller.	7	3	4	1,2,3
17. a)	Explain the ARM processor memory organization?	7	2	5	1,2
b)	Write an Assembly Language Program to interface 8051 Microcontroller with stepper motor to rotate 5 times in anti-clockwise direction?	7	3	5	1,2,3
18. a)	What will be the contents of AX after executing following instructions? Identify which flags are affected? I1: MOV CL,03H I2: SAL AL,CL I3: ADC AL,CL I4: RCL AL,CL	7	3	1	1,2,3
b)	What is a procedure? Explain the CALL and RET instructions in procedures with examples.	7	2	2	1,2
19.	Answer any <i>two</i> of the following:				
a)	What parameters need to be loaded into DMA registers before DMA starts data transfer between I/O devices to/from primary memory?	7	3	3	1,2
b)	Explain various addressing modes used in 8051 microcontroller with examples.	7	2	4	1,2
c)	Assume there are two interrupt requests are received simultaneously, how these are handled in 8051?	7	3	5	1,2

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

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	40
2	Knowledge on application and analysis (Level-3 & 4)	60
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	-