VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
B.E. (EEE: CBCS) VI-Semester Main & Backlog Examinations, May-2019
Microprocessors and Microcontrollers

Time: 3 hours   Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	What is the need for ALE signal in 8086 microprocessor	2	2	1	1,3
2.	Define the purpose of HOLD and HLDA pins in 8086	2	2	1	1,3
3.	Explain the following assembler directives i) ENDS Directive ii) EQUATE Directive	2	2	2	2,3,5
4.	With CS=1000, DS=2000,BX=0023, i) Calculate the physical address of the memory for the following instruction from where AL is getting data. MOV AL,[BX]. ii) The above instruction is an example of _____ addressing mode.	2	2	2	2,3,5
5.	Locate the CS and IP address of Type-1 interrupt in 8086 from interrupt vector table.	2	2	3	1,3
6.	Define the following in serial communication i) Simplex ii) Half Duplex iii) Full Duplex	2	1	3	1,3
7.	Write the format of SCON register and explain.	2	1	4	2,3,5
8.	Find the machine cycle time for the following crystal oscillator frequencies in 8051. i) XTAL = 11.0592 MHz ii) XTAL = 16 MHz.	2	2	4	2,3,5
9.	What is the value of TMOD to operate 8051 timers in Timer1, Mode 2 Operation?	2	1	4	2,3,5
10.	How interrupt priority is set in 8051 microcontroller?	2	2	4	2,3,5
	Part-B (5 × 10 = 50 Marks)				
11.a)	Illustrate the operation of BIU and EU units in 8086 and also draw the block diagram with a neat sketch also explaining the functionality of segmentation with an example.	5	4	1	1,2
b)	Explain the maximum mode operation of 8086 with a neat diagram.	5	4	1	1,2
12.a)	Write an Assemble language Program in 8086 to move a string "DEPARTMENT" starting from 2000:0040 Memory location to 2000:0060 Memory location.	5	2	2	1,3
b)	Distinguish between Procedure and Macro in 8086.	5	2	2	1,3

				M	L	CO	PO
13.	a)	Draw the circuit and Write an Assembly language Program in generating a saw tooth waveform with D/A converter interfacing with 8086 and 8255.		5	4	3	2,3,5
	b)	Draw and explain the architecture of 8255 and explain the operation of each block along with its modes.		5	4	3	2,3,5
14.	a)	Draw the pin diagram of 8051 microcontroller.		5	2	4	2,3,5
	b)	Explain with an example Program Status Word (PSW) in 8051.		5	2	4	2,3,5
15.	a)	Analyze the following program and find the time delay in seconds. Exclude the overhead due to the instructions in the loop.		6	4	4	2,3,5
	b)	Assuming XTAL = 11.0592 MHz, write a program to generate a Square wave of 50 Hz frequency on pin P2.3 in 8051.		4	4	4	2,3,5
16.	a)	Briefly describe about addressing modes of 8086 with an example.		6	2	1	1,2
	b)	Explain the following assembler directives		4	2	2	1,3
17.		Answer any *two* of the following:					
	a)	Draw and explain the architecture of 8251(USART).		5	4	3	2,3,5
	b)	Explain the alternate I/O Port functions of 8051 microcontroller.		5	2	4	2,3,5
	c)	Draw and explain the interfacing of LCD and write an Assembly language program to display "EEE" on the LCD screen using 8051.		5	4	4	2,3,5

Program for 15. a):

```
        MOV  TMOD,#10H
        MOV  R3,#100
AGAIN:  MOV  TL1,#08
        MOV  TH1,#01
        SETB TR1
BACK:   JNB  TF1,BACK
        CLR  TR1
        CLR  TF1
        DJNZ R3,AGAIN
```

Assembler directives for 16. b):
i)   OFFSET
ii) EVEN
iii) DB
iv) ORG

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)	58
2	Knowledge on application and analysis (Level-3 & 4)	42
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	0

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