[35] SEAT No._____ No. of Printed Pages : 2

SARDAR PATEL UNIVERSITY
M.Sc.(Electronics) II Semester Examination (CBCS)
Wednesday, 20th March, 2019 Time : 10.00 AM to 1.00 PM
PS02CELE22 – Microprocessor & Real Time Systems (70 Marks)

Note : 1. Answer of all the questions including multiple choice questions should be written in the provided answer book only.
2. Figure to the right indicates maximum marks for the question.

Q.1	**Multiple choice questions : One mark each**	**[8]**
a.	The 8086 Microprocessor stores its return addresses in_____ Segment of Memory. **i. Code ii. Data iii. Stack iv. Extra**	
b.	The addressable size of Active Memory allocated to all Segments in 8086 Microprocessor is _____ byte. **i. 16 KB ii. 32 KB iii. 128 KB iv. 256 KB**	
c.	The _____flag sets to logic 1 state in 8086 Microprocessor is when signed result is out of range. **i. Zero ii. Parity iii. Overflow iv. Trap**	
d.	If AL = FE H and BL = FD H, what will be the result in AX after execution of MUL BL instruction? Answer: _____. **i. FB06 ii. FC06 iii. FDFE iv. 0006**	
e.	The instruction MOV AX, [BX+2] belongs to _____ addressing Mode Instruction. **i. Register ii. Direct iii. Base iv. Index**	
f.	Instruction _____ permit *auto-increment* mode of operation and SI and/or DI are incremented by 1 *for Byte-wide operation* and by 2 *for Word-wide operation.* **i. STI ii. CLI iii. STD iv. CLD**	
g.	_____ Interrupt is having higher priority than Single Step Interrupt. **i. Overflow ii. Break Point iii. Divide Error iv. INT 32**	
h.	The internal frequency oscillator of PSoC Processor CY8C27443-24PXI generates ____ MHz clock frequency. **i. 3 ii 6 iii. 12 iv. 24**	
Q.2	**Short questions : Attempt any seven (2 Marks each)**	**[14]**
i.	Explain SBB instruction with an example.	
ii.	Discuss DAS instruction with necessary example.	
iii.	What clock outputs are produced by 8284? What would be their frequencies if a 30 MHz crystal was used?	
iv.	What is the function of READY pin in 8086 microprocessor?	
v.	What is the role of $M/\overline{IO}$ line in 8086 Microprocessor ?	
vi.	Two byte sized BCD integers are stored at the symbolic addresses NUM1 and NUM2 respectively. Write an instruction sequence to add them and store it at NUM3.	
vii.	How many clock states are in an 8086 bus cycle that has no wait state? How are these states denoted?	

(P.T.O.)

viii	Explain the function of $\overline{S0}$, $\overline{S1}$ and $\overline{S2}$ line in 8086 during Maximum mode of operation	
ix	What is a Real-Time Operating System?	
Q.3(a)	Draw the software architecture of 8086 Microprocessor and explain it in details.	**[6]**
(b)	What is a Flag? Explain the function of Status and Control Flags of 8086 Microprocessor in details.	**[6]**
	OR	
(b)	**Implement the following operation using *shift and arithmetic instructions.*** **7(AX) – 5(BX) –1/8(BX) → AX** **Assume that all parameters are word sized.**	**[6]**
Q.4(a)	Draw a neat sketch of **Maximum mode interface of 8086 microprocessor** and explain functions of **8288 Bus controller** and **8289 Bus Arbiter.**	[7]
(b)	Two word wide unsigned integers are stored at the memory addresses 0A00H and 0A02H respectively. Write an instruction sequence that computes and stores their sum, difference, product and quotient. Store these results at consecutive memory location starting at address 0A10H in memory. To obtain the difference, subtract the integer at 0A02 from the integer at 0A00H. For the division, divide the integer at 0A00 by the integer at 0A02H. Use register indirect relative addressing mode to store the various results.	**[5]**
	OR	
(b)	Draw a neat sketch of **Waveforms** of **Memory READ Operation** in 8086 Microprocessor and Explain it.	**[5]**
Q.5(a)	Explain how Local and Remote Demultiplexing in 8086 microprocessor are carried out?	**[6]**
(b)	Draw the circuit diagram of 8 Byte wide Output Port interface of 8086 Microprocessor in Minimum mode and explain it.	**[6]**
	OR	
(b)	With the help of block diagram, explain interrupt interface in Maximum mode operation of 8086 microprocessor.	**[6]**
Q.6(a)	Explain the function of internal interrupts in 8086 Microprocessor (any three).	**[6]**
(b)	Draw the Architecture of PSoC Processor and explain functions of each block.	**[6]**
	OR	
(b)	Draw a flow-chart of interrupt execution sequence in 8086 Microprocessor and explain it.	**[6]**

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