

20/10/12

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B.E. (Full Time) Degree End Semester Examinations, NOV/ DEC 2012

ELECTRICAL & ELECTRONICS ENGINEERING,

Fourth Semester – ( Regulation 2008 )

EE 9252 MICROPROCESSORS AND MICRO CONTROLLERS

Time : 3 hr

Answer ALL questions

Max. marks : 100.

PART – A ( 10 x 2 = 20 )

1. What is the purpose for which the flag bit 'AC' is available in 8085?
2. What is the purpose for which the signal 'ALE' is available in  $\mu\text{P}$  8085/  $\mu\text{C}$  8051?
3. Show the decoding hardware necessary to interface a 4Kbyte sized EPROM to the 8085 with a required memory mapping of  $3000 - 3FFF_H$ ?
4. There is no explicit instruction for 'jumping if overflow flag is set' in  $\mu\text{C}$  8051. How would you manage this, using the relevant bit – oriented instruction available?
5. Distinguish between the operation performed by the instructions: INR D and INX D?
6. What is the purpose for ICW1 of the programmable interrupt controller 8259?
7. What are the roles for the HL register pair of  $\mu\text{P}$  8085 ?
8. Discuss the operation performed by the 8051 instruction DIV AB. How does this instruction affect the overflow flag?
9. What is/are the instruction(s) available in  $\mu\text{C}$  8051 to make reference to a look-up table included as a part of the program code?
10. What is the operation performed by the instruction ' PUSH PSW' in  $\mu\text{P}$  8085? And the same instruction in  $\mu\text{C}$  8051? Distinguish between these two cases.

PART – B ( 5 x 16 = 80 )

11. Along with external hardware circuit and the machine cross-sectional diagram, explain how a stepper motor interface can be controlled from  $\mu\text{C}$  8051. Use the port-1 of  $\mu\text{C}$  8051. Assuming variable reluctance type stepper motor is available with a step angle of 2 degrees, write a program using 8051 assembly language for deflecting the stepper motor shaft by 30 degrees. Assume half-step mode.
12. a) i) Draw the timing diagram showing fetching and complete execution of the  $\mu\text{P}$  8085 instruction MVI B,  $9A_H$ . Assume that this instruction is fetched from memory location  $4567_H$ .  
ii) Along with a neat sketch of the functional block diagram / architecture, describe the salient features available in the 8-bit  $\mu\text{P}$  8085. (8 + 8)  
OR  
b) i) Write a subroutine for generating a time delay in  $\mu\text{P}$  8085, using software delay loop. Also evaluate the count required to obtain a time delay of about 15 msec. Assume a  $\mu\text{P}$  clock frequency of 3 MHz.