M.E DEGREE EXAMINATIONS: DEC 2015

(Regulation 2014)

Third Semester

EMBEDDED SYSTEM TECHNOLOGIES

P14ESTE12**:** Embedded Control of Electrical Drives

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Identify the number of address lines of MC68HC11 controller   CO1   [K$_2$]

    a)   16   b)   32

    c)   20   d)   24

2. The MC68HC11 approach the memory by the technique   CO1   [K$_1$]

    a)   DPTR   b)   IP

    b)   PC   d)   SP

3. Running condition reset is occurred using   CO1   [K$_1$]

    a)   BOR   b)   POR

    c)   WDT   d)   AJN

4. Cache memory is made up of   CO2   [K$_1$]

    a)   Static MOS   b)   Dynamic MOS

    c)   CMOS   d)   BICMOS

5. Match list I with list II for 8096 controller and select the correct answer using the codes   CO2   [K$_2$]
    given below:

List I	List II
A. Number of Timers	i. 10
B. Number of I/O ports	ii. 20
C. Number of bits of ADC	iii. 2
D. Number of Interrupt sources	iv. 5

	A	B	C	D
a)	iii	i	ii	iv
b)	iii	iv	i	ii
c)	i	iv	ii	iii
d)	iv	iii	i	ii

6. Interface controller gives the gate signal to the power device through CO2 [K$_1$]

    a) Pull up resistor   b) Pull down resistor

    c) Push pull amplifier   d) Darligton pair

7. Which technique is used to control the speed of DC motor CO3 [K$_1$]

    a) Infinite loop   b) Hall sensor feedback

    c) Delay control   d) PWM

8. Port0 of 8096 microcontroller is _____ port CO1 [K$_1$]

    a) Input   b) Output

    c) Input / Output   d) Discrete

9. In 8096 controller Interrupts are enabled or disabled using the _____ bit of the PSW register CO1 [K$_1$]

    a) 6   b) 8

    c) 9   d) 16

10. Assertion (A) : 8096 microcontroller working in expanded mode both internal and external memory can be accessed. CO1 [K$_1$]
Reason (R) : 8096 microcontroller has multiplexed bus architecture.

    a) Both A and R are wrong   b) Both A and R are correct

    c) A is correct and R is wrong   d) A is wrong and R is correct

PART B (10 x 2 = 20 Marks)

11. Compare various indirect addressing modes with suitable examples. CO1 [K$_2$]

12. Develop an assembly language program to perform addition of two 16 bit numbers. CO1 [K$_3$]

13. List the timers of MC68HC11. CO2 [K$_1$]

14. List the hardware interrupts of MC68HC11 CO2 [K$_1$]

15. Assess the importance of queues concept in 8096 controller. CO1 [K$_2$]

16. Explain the status register of 8096. CO1 [K$_2$]

17. Justify the need of WDT. CO1 [K$_1$]

18. List the initialization inputs of RTC. CO2 [K$_1$]

19. Illustrate the interfacing component between power and control. CO2 [K$_1$]

20. Give short notes on temperature measuring component. CO3 [K$_1$]

PART C (10 x 5 = 50 Marks)

21.	Explain the addressing modes of MC68HC11.	CO1	[K$_1$]
22.	Write an assembly language program for MC68HC11 to sort 5 numbers in ascending order.	CO1	[K$_3$]
23.	State the purpose of timer-0 module of MC68HC11	CO2	[K$_2$]
24.	What do you mean by reset hardware structure of MC68HC11.	CO1	[K$_2$]
25.	Evaluate the importance of instruction set in 8096 controller.	CO1	[K$_2$]
26.	Write an assembly language program to control the speed of DC motor interfaced with 8096.	CO3	[K$_3$]
27.	Explain the interfacing of RTC with the 8096 controller.	CO2	[K$_3$]
28.	Analyse the significance of PWM module of 8096 controller.	CO3	[K$_3$]
29.	How will you measure frequency? Explain the frequency measurement technique with a suitable controller.	CO3	[K$_3$]
30.	Give a brief note on key switch interfacing matrix using 8096 controller.	CO3	[K$_2$]

PART D (2 x 10 = 20 Marks)

31.	Draw and explain the architecture of MC68HC11 microcontroller.	CO1	[K$_2$]
32.	Design and explain the hardware interfacing of temperature measurement up to 100 degree Celsius with a resolution of 2 degree using MC68HC11.	CO3	[K$_3$]

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