Q. Code:738972

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Fourth-Semester

EC22409-MICROCONTROLLER SYSTEMS: THEORY AND PRACTICES

(Electronics and Communication Engineering)

(Regulation 2022)

TIME: 2 HOURS **MAX. MARKS: 60**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Identify and understand function of different blocks of PIC and Atmega microcontroller	**3**
CO 2	Develop programs for data transfer, arithmetic, logical and I/O port operations for PIC16 using "C"	**4**
CO 3	Develop programs for Serial port, Timers, Interrupts and various Interfacing devices with PIC16f84A and Atmega Microcontrollers.	**4**
CO 4	Develop program codes with PIC16f84A and Atmega for specific application.	**4**
CO 5	Measure the performance of A/D and D/A.	**3**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Write down the format of DECFSZ instructions with an example.	**1**	**2**
2.	Find the 'C' flag value after each of the following codes **a)**MOVLW 54H ; ADDLW 0C4H **b)**MOVLW 9CH; ADDLW 64H	**1**	**3**
3.	What is the difference between #pragma udata and #pragma idata?	**2**	**2**
4.	Perform the bitwise operation using a PIC microcontroller for i) 0x9A >> 3 ii) 0x78 << 4	**2**	**3**
5.	Which timer can be used for PWM mode for CCP1?	**3**	**2**
6.	Give the state of the RS,E and R/W when sending a command code to LCD.	**3**	**2**
7.	Write the status register of ATMEGA microcontroller.	**4**	**2**
8.	Explain the role of DDRx and PORTx in I/O operations.	**4**	**2**

9.	What is the advantage of a stepper motor over a DC motor?	**5**		**2**
10.	What is PWM? How many PWM pins are present in Arduino UNO?	**5**		**2**

PART- B (3 x 10 = 30 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Discuss in detail about the architecture of PIC microcontroller with a neat diagram.	**(10)**	**1**	**3**
	(OR)			
(b)	Discuss the conditional branch instructions of PIC with suitable examples.	**(10)**	**1**	**3**
12. (a)	Analyze the different C data types with an example program for PIC microcontroller.	**(10)**	**2**	**3**
	(OR)			
(b)	Discuss in detail about the data RAM allocation in C18 with examples.	**(10)**	**2**	**3**
13. (a)	Analyze in detail about the data memory and code memory organization in ATMEGA microcontroller.	**(10)**	**4**	**3**
	(OR)			
(b)	Explain the role of stack in CALL instructions of ATMEGA microcontroller.	**(10)**	**4**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
14.	Develop a C program code for Interfacing PWM to control the brightness of LED using PIC microcontroller and briefly discuss about how the interfacing is done.	**(10)**	**3**	**5**

****