P P SAVANI UNIVERSITY

Fifth Semester of B. Tech. Examination

November 2019

SEIT3022 EMBEDDED SYSTEMS

22.11.2019, Friday **Time: 09:00 a.m. To 11:30 a.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1	Answer Short Questions(Any **Five**)	**[05]**
(i)	Give difference between Microprocessor and Microcontroller?	
(ii)	What is UART?	
(iii)	What is real time embedded systems?	
(iv)	Explain buses in embedded system.	
(v)	Why infinite loop is needed in embedded system?	
(vi)	Explain delay function with syntax.	
(vii)	Why setup() function is nedded?	
Q - 2 (a)	What are the typical characteristics of an embedded system?	**[05]**
Q - 2 (b)	Explain memory structure of an embedded system.	**[05]**
	OR	
Q - 2 (a)	Write a short note on Timer.	**[05]**
Q - 2 (b)	Explain concept of Direct Memory Access (DMA).	**[05]**
Q - 3 (a)	What is an interrupt? Explain interrupt service routine (ISR).	**[05]**
Q - 3 (b)	Explain special function registers in 8051.	**[05]**
	OR	
Q - 3 (a)	Explain ports in 8051.	**[05]**
Q - 3 (b)	Write short note on Serial and Parallel communication.	**[05]**
Q - 4	Attempt any **one**.	**[05]**
(i)	Sketch interfacing diagram to interface 8x8 LED Matrix with Program.	
(ii)	Sketch interfacing diagram to interface Keypad and LCD to display Password with program.	

SECTION – II

Q - 1	Do as directed. (Any **Five**)	**[05]**
(i)	True or False. Arduino IDE is proprietary.	
(ii)	True or False. Arduino UNO hasn't on-board ADC.	
(iii)	Enlist Arduino boards available in market.	
(iv)	Define: Embedded Systems	
(v)	What are advantages of Arduino over 8051 Microcontroller.	
(vi)	Why LCD is superior as a display device as compared to LED and 7-segment?	
(vii)	Enlist features of Arduino Uno development board.	
Q - 2 (a)	Differentiate Arduino Uno and ESP8266.	**[05]**
Q - 2 (b)	One distance sensor mounted back side of automotive application. Develop an Arduino sketch to do following: If distance is less then 30 cm then sound the buzzer.	**[05]**
	OR	
Q - 2 (a)	Develop an Arduino sketch to display 0 to 9 on common anode 7-segment.	**[05]**

Q - 2 (b)	**Develop an Arduino sketch to display distance acquired by distance sensor on serial monitor.**	**[05]**
Q - 3 (a)	**What is role of GPIO pins of Arduino for development of an embedded systems?**	**[05]**
Q - 3 (b)	**Differentiate serial communication and parallel communication.**	**[05]**
	OR	
Q - 3 (a)	**Interface DC motor with an Arduino Uno. Develop an Arduino sketch to rotate motor clockwise.**	**[05]**
Q - 3 (b)	**With help of Arduino sketch explain digitalRead and digitalWrite API of it.**	**[05]**
Q - 4	**Attempt any one.**	**[05]**
(i)	**Interface temperature sensor with Arduino UNO. With help of Arduino sketch explain significance of analogRead API of an Arduino.**	
(ii)	**Sketch interfacing diagram to interface 16*2 Alphanumerical LCD with Arduino Uno.**	

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