[6003]-403

T.E. (E & TC)

EMBEDDED PROCESSOR

(2019 Pattern) (Semester - II) (304195D) (Elective - II)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1) *Answer Q.1 or Q.2, & Q.3 or Q.4, & Q.5 or Q.6, & Q.7 or Q.8.*
2) *Neat diagrams must be drawn wherever ncessary.*
3) *Figures to the right indicates full marks.*
4) *Use of Calculator is allowed.*
5) *Assume suitable data, if necessary.*

Q1) a) Explain UART module of LPC2148 in short.   **[6]**

b) Write down the code to transmit the data "Hello" continuously using serial port.   **[6]**

c) Draw an Interfacing diagram of GSM module with LPC2148 and write an initialization program to send a message.   **[6]**

OR

Q2) a) Draw an interfacing diagram of DHT11 with LPC2148 and write an algorithm to display the temperature on LCD.   **[6]**

b) Enlist the features of on-chip ADC in LPC2148. Explain AD0GDR register.   **[6]**

c) Draw an interfacing diagram of servomotor with LPC2148 and write down the code to rotate the motor in clockwise direction.   **[6]**

Q3) a) Explain CMSIS Standard use for Firmware development.   **[9]**

b) Write the features of STM32F4xx.   **[8]**

OR

Q4) a) Explain with diagram ARM STM Bus Architecture.   **[9]**

b) Differentiate between CORTEX A, R, M processors.   **[8]**

P.T.O.

Q5) a) Enlist various registers required to configure Serial Communication of STM32F4xx Microcontroller. Explain any one with suitable example. **[6]**

b) Write a C program to generate a Ramp Waveform, Square Waveform using on chip DAC of STM32F4xx controller. **[6]**

c) Enlist various registers required to configure Timers of STM32F4xx Microcontroller. Explain any one with suitable example. **[6]**

OR

Q6) a) Draw an interfacing diagram and write a C program to blink LED's connected to Pin numbers (Port D) PD 12, 13, 14 and 15 using STM 32F4xx Controller. **[6]**

b) Draw an interfacing diagram and draw flowchart to interface "7 Segment" with STM32F4xx controller and display count digit "1" or "7" on it. **[6]**

c) Explain GPIO_ODR and GPIO _ BSRR of STM32F4xx with simple example. **[6]**

Q7) a) Draw an interfacing diagram and write a algorithm to interface accelerometer MPU 6050 using STM32F4xx microcontroller. **[9]**

b) Draw an interfacing diagram and draw a flowchart to interface Ultrasonic Sensor HC-SR04 using STM32F4xx microcontroller. **[8]**

OR

Q8) a) Write the features of CAN bus? Explain CAN bus frame? **[9]**

b) Draw an interfacing diagram and write algorithm to Control DC Motor using PWM using STM32F4xx microcontroller. **[8]**

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