Total No. of Questions : 8]

SEAT No. :

**PA-1497**

[Total No. of Pages : 2

# [5926]-117
# T.Y. (E & TC)
# EMBEDDED PROCESSORS
## (2019 Pattern) (Semester - II) (Elective - II) (304195)

*Time : 2½ Hours]* *[Max. Marks : 70*

***Instructions to the candidates:***

1) ***Solve 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 whenever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data jf necessary.***

***Q1)*** a) Write features of UART0. Write the format of LCR Register. **[5]**

b) Draw interfacing diagram of GSM using UART with LPC 2148. Write algorithm to send message using GSM Module. **[6]**

c) Draw and explain interfacing of DHT11with LPC2148. Write algorithm/ flowchart to display temperature and humidity. **[6]**

OR

***Q2)*** a) Draw and explain the interrupt structure of LPC 2148. **[5]**

b) Draw interfacing diagram of GSM using UART with LPC 2148. Write algorithm/flowchart to display location received from GPS interfaced with LPC2148. **[6]**

c) Draw and explain interfacing of servomotor with LPC2148. Write algorithm/flowchart to rotate the motor. **[6]**

***Q3)*** a) Compare ARM7and ARM Cortex. What are advantages of ARM Cortex over ARM Processor? **[6]**

b) Explain programmer model of ARM CORTEX M4. **[6]**

c) How CMSIS Standard is used for firmware development? **[6]**

OR

***P.T.O.***

***Q4)*** a) Describe Memory Map of ARM CORTEX M4. **[4]**

b) What are different exceptions and nested Vector interrupt Controller in STM32F4xx controller? **[6]**

c) With the block diagram explain the STM32F4xx Architecture. **[8]**

***Q5)*** a) What are different SFRs related with GPIO. **[5]**

b) Write algorithm/ flowchart to generate delay of 5ms using Timer of STM32F4xx controller. **[6]**

c) Enlist the features of on chip ADC of STM32F4xx controller. **[6]**

OR

***Q6)*** a) Draw and explain interfacing diagram of seven segment display with STM32F4xx. **[5]**

b) Write algorithm/flowchart to transmit serially. 'NUMBER' on hyper terminal using UART of STM32F4xx. **[6]**

c) Draw and explain interfacing diagram of LDR and MQ3 sensor with ARM Cortex Microcontroller. **[6]**

***Q7)*** a) Draw and explain an interfacing of STM32F4xx with Ultrasonic Sensor HC-SR04. **[5]**

b) Explain how PWM of STM32F4xx used to control the speed of DC motor. **[5]**

c) Enlist the features of CAN Bus and describe briefly sequence of transmitting and receiving character. **[8]**

OR

***Q8)*** a) Draw and explain an interfacing of STM32F4xx with accelerometer MPU 6050. **[5]**

b) Write an algorithm to rotate the motor in clockwise direction using PWM of STM32F4xx. **[5]**

c) Write a short note on CAN Bus and describe its frame structure. **[8]**

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