**Total No. of Questions : 10]**

**SEAT No. :** ____

**P 3285**

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# [5353] - 158
# TE (E & TC) (Semester - II)
# EMBEDDED PROCESSOR
# (2012 Pattern)

***Time : 2:30 Hour]*** ***[Max. Marks :70***

***Instructions to the candidates:***

1) ***All questions are compulsory***
2) ***Figures to the right Indicate full marks.***

***Q1***) a) Explain any four modes of operation of ARM 7. **[4]**

b) Explain instructions:

i) CMP r0,r1 ii) ADD r0, r1, r1, LSL #1

iii) LDR r0,= 0 × 42 iv) MOVS r2,#10 **[4]**

c) Explain why ARM processors are used in embedded applications. **[2]**

OR

***Q2)*** a) Explain memory map of LPC2148. **[4]**

b) Compare features of ARM7, ARM9 and ARM 11. **[4]**

c) State function of AHB and APB bus. **[2]**

***Q3)*** a) Write an embedded C program for toggling LED'S connected to the port pin P1.16-P1.23 of LPC2148 also draw interfacing diagram for the same. **[6]**

b) Explain interfacing of SD card to LPC 2148. **[4]**

OR

***Q4)*** a) List the features of timers and discuss the operation of any one timer of LPC2148. **[6]**

b) List the features of UART Block of LPC2148 and explain it. **[4]**

***Q5)*** a) Draw and explain the block diagram of Cortex M3 **[8]**

b) What is CMSIS? Why it is needed? Explain its layered architecture **[8]**

OR

***P.T.O***

***Q6)*** a) Compare ARM7 and Cortex M3 processors **[8]**

b) Explain why operating system is needed in embedded system? Also explain the desire features of operating system. **[8]**

***Q7)*** a) Write a program to generate PWM wave of different duty cycle. **[8]**

b) Draw interfacing diagram to interface RGB LED to LPC1768 and write a program to display color on LED. **[8]**

OR

***Q8)*** a) Explain all clock sources available in LPC 1768. **[8]**

b) Interface two 7 segment displays to LPC1768 and write a program to display number '23' on the display. **[8]**

***Q9)*** a) State features of CAN protocol. Draw and explain frame format of CAN protocol **[9]**

b) Draw and explain interfacing of TFT with LPC 1768 **[9]**

OR

***Q10)***a) State features of ETHERNET protocol. Draw and explain frame format of ETHERNET protocol. **[9]**

b) Explain nested vector interrupt controller and bit band area of LPC1768. **[9]**

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