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T.E. (Electronics Engineering)
EMBEDDED PROCESSORS (304211)
(2012 Course) (Endsem - I)

Time : 2 ½Hours]   *[Max. Marks :70]*

Instructions to the candidates:
   1)   Answer the Q1 or Q2, Q3 or Q4, Q5 or Q,6,Q7 or Q8, Q9 or Q10.
   2)   Answers any five questions.
   3)   Neat diagrams must be drawn wherever necessary.
   4)   Figures to the right side indicate full marks.
   5)   Use of Calculator is allowed.
   6)   Assume suitable data, if necessary.

Q1) a)   What are privileged & non-privileged modes of operation of ARM
             processor? Explain it.   **[4]**

  b)   What is significane of special purpose registers r_{13}, r_{14}, r_{15}?   **[4]**

  c)   Explain following ARM instructions (assume suitable data)   **[2]**
       i)   ORR
       ii)   BIC

OR

Q2) a)   Differentiate between ARM mode & thumb mode operation of ARM 7
             processor.   **[4]**

  b)   What are the different operating modes of ARM 7 ?   **[4]**

  c)   What is meant by 7 TDMI w.r.t ARM core ?   **[2]**

Q3) a)   Explain the GPIO ports available & registers to control the same.   **[6]**

  b)   Explain the steps to generate the delay of 500 ms using timer when
       PCLK =15MHz.   .**[4]**

OR

Q4) a)   Explain the significance of PLLO & PLL 1 with suitable diagram.   **[4]**

  b)   Draw interfacing diagram between LPC 2148 & LCD16×2 display. State
       Algorithm, SFR's involved with their typical value & LCD commands
       used to display "PUNE" on LCD.   **[6]**

Q5) a) List different cortex A,R,M processor family series & versions. Also write applications of each family. **[6]**

b) Draw & explain block diagram of ARM cortex M3. What are the improvements of ARM cortex M3 over ARM 7. **[10]**

OR

Q6) a) Explain thread & handler mode with suitable diagram. Also write the features of LPC 1768. **[8]**

b) Explain CMSIS standard with structure in detail. Also explain Firmware in embedded systems. **[8]**

Q7) a) Interface RGBLED with LPC 1768, also write embedded 'C' program to generate different colours. **[8]**

b) Write the applications of LPC1768 in real word interfacing with example in detail. **[8]**

OR

Q8) a) Draw interfacing of LPC 2148 with DC motor with PWM control. Also explain different PWM control applications.. **[8]**

b) How NVIC differs from VIC? Explain features of NVIC in LPC 1768.**[8]**

Q9) a) Draw & explain interfacing diagram of USB using USB device mode with LPC 1768. **[8]**

b) Draw & explain interfacing of TFT with LPC 1768 also draw flowchart/ Algorithm for the same. **[10]**

OR

Q10)a) Write a short note on following block in LPC 1768. **[12]**
   i) CAN
   ii) USB
   iii) Ethernet

b) Explain different self test condition in CAN. **[6]**

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