

Total No. of Questions :6]

SEAT No. :

**P89**

**APR. -16/TE/Insem. - 21**

[Total No. of Pages :2

**T.E.(E&TC)**

**EMBEDDED PROCESSORS**

**(2012 Course) (Semester - II) (304191)**

*Time : 1Hour]*

*[Max. Marks :30*

*Instructions to the candidates:*

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.*
- 2) *Neat diagrams must be drawn whenever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data if necessary.*

- Q1) a)** Draw and explain data flow model of ARM7. **[5]**
- b) Compare ARM 7, ARM 9 and ARM 11. List the applications of these processors. **[5]**

OR

- Q2) a)** Explain CPSR register in detail. What is the need of SPSR register. **[4]**
- b) Explain following ARM instructions.(any three) **[6]**
- i)  $\text{MOV } R_1, R_3, \text{LSL } \# 2$
  - ii)  $\text{SUB } R_0, R_1, R_2$
  - iii)  $\text{CMP } R_0, R_9$
  - iv)  $\text{LDR } R_0[R_1], \# 4$
  - v)  $\text{UMVLL } R_0, R_1, R_2, R_3$
- Q3) a)** Explain with neat diagram relation between CCLK and PCLK with the help of VPB/APB divider. Find the configuration of VPB divider to achieve  $\text{PCLK} = 30\text{MHz}$  for  $\text{FOSC} = 12\text{MHz}$ . **[6]**
- b) Explain the features of timers of LPC 2148. **[4]**

OR

**P.T.O.**

- Q4)** a) Explain the registers IOSET, IOCLR, IODIR with suitable example. [6]  
b) Draw the interfacing diagram between LCP 2148 & LCD 16×2 in 8 bit mode. Write algorithm to display message on LCD. [4]
- Q5)** a) Draw & explain interfacing diagram of I2C EEPROM 24 C XXX with LPC 2148. [5]  
b) What is the function of CLKDIV bits in ADOCR register of on chip ADC of LPC 2148? If the value of CLKDIV =3 in ADOCR Register, Pclk= 15 MHz, calculate the value of A/D clk. [5]

OR

- Q6)** Write a short note on (any two) [10]
- a) I2 START, I2C STOP condition in I2C protocol.
  - b) Vector interrupt controller
  - c) SPI Protocol
  - d) Features of ADC

