Roll No. ☐☐☐☐☐☐☐☐☐☐☐   **Total No. of Pages : 02**

Total No. of Questions : 8

M.Tech (EPDT)   (Sem.–1)
PROGRAMMING WITH ADVANCED MC & DSP PROCESSORS
Subject Code : MTEP-101-18
Paper ID : [75227]

Time : 3 Hrs.   **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :
1.Attempt any FIVE questions out of EIGHT questions.
2.Each question carries TWELVE marks.

Q1   a. Draw the detailed structure of internal registers of ARM Cortex-M3 processor and explain the role of each register. (6)

   b. What are the different operating modes of ARM Cortex-M3 processor? Explain each of them. (6)

Q2   a. Explain the following instructions of ARM processor with suitable example :

   i. ADC   ii. MUL   iii.LSL   iv. BX   (6)

   b. What are the similarities and differences of ARM and Thumb state? Explain the process to enter and exit from ARM to Thumb state. (6)

Q3   a. Write an ARM assembly language program to arrange ten 32-bit numbers in ascending order. (6)

   b. Draw and explain the instruction format of branch instructions of ARM Cortex- M3 processor. (6)

Q4   a. List the features of LPC 17xx microcontroller. (6)

   b. Draw and explain the internal architecture of LPC 17xx microcontroller. (6)

Q5   a. Draw and explain the working of Harvard architecture with a dual-ported data memory and a single-ported program memory. Also explain how the processor core can simultaneously perform two accesses to memory bank A and one access to memory bank B using three independent sets of buses. (8)

   b. Write down in detail all the three reasons for occurrence of wait state in DSP processors. (4)

Q6   a. Draw and explain the internal architecture of TMS320C6x processor.   (6)

b. How many types of bus structures are available in TMS320C6x processor? Also explain the function of each bus.   (6)

Q7   a. What is addressing mode? Describe how modulo addressing and bit reverse addressing improves the performance in DSP processor.   (8)

b. Discuss the role of Barrel shifter in DSP processors.   (4)

Q8   Write note on following :

a. Code Composer Studio   (6)

b. Nested Vectored interrupt   (6)