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

Total No. of Questions : 08

M.Tech. (Emb. Sys.) (2018 Batch) (Sem.–1)

PROGRAMMING WITH ADVANCED MC & DSP PROCESSORS

Subject Code : MTES-102-18

M.Code : 75809

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) Explain the architecture of ARM Cortex-M3 processor with the help of neat block diagram. 6

b) Discuss the concept of 3 stages pipelining and its limitations in ARM processor. How these limitations are overcome in 5 stage pipelining? 6

Q2 a) Explain the following instructions of ARM Cortex-M3 processor with suitable examples. 6

i) MUL

ii) BX

iii) LSL

iv) PUSH

v) BL

vi) RSB

b) Write an ARM assembly language program to arrange ten 32 bit numbers in descending order. 6

Q3 a) Explain reset sequence with the help of memory map. 4

b) What are the different schemes of interrupt and exception handling? Explain nested vectored handler scheme. 8

Q4 a) Draw a simplified block diagram of LPC 17XX microcontroller and explain the role of UART, PWM, ADC and timers. 6

b) Explain the features of AMBA bus. Discuss the role of AMBA- AHB, APB and ASB in ARM processor with diagram. 6

Q5 a) What is memory hierarchy and how it is useful in ARM processor? Explain different memory hierarchies of ARM processor. 6

b) Describe the architecture of TMS320C6000 and briefly explain the CPU, register file cross paths, memory load/store paths and data address paths. 6

Q6 a) Write the memory map of Cortex M3 and explain briefly bit-band operations. 6

b) Draw and explain the architecture of barrel shifter used in programmable DSP (P-DSP) processors. 6

Q7 a) What is processor benchmarking? Discuss the limitations of benchmarking. 6

b) Explain the different operational modes of ARM Cortex M3 with diagrams. 6

Q8 Write short notes on **any two** of the following : 6 × 2

a) Texas Instrument DSP processor family.

b) Interrupt latency.

c) Studio for application development for digital signal processing.

NOTE : Disclosure of Identity by writing Mobile No. or making of passing request on any page of Answer sheet will lead to UMC against the Student.