

Code No.: R22EC57102PC

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**CMR ENGINEERING COLLEGE: : HYDERABAD  
UGC AUTONOMOUS**

**I-M.TECH-I-Semester End Examinations (Regular) - March- 2024  
MICROCONTROLLERS & PROGRAMMABLE DIGITAL SIGNAL PROCESSORS  
(VLSISD)**

[Time: 3 Hours]

[Max. Marks: 60]

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 10 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A**

**(10 Marks)**

1. a) List out the applications of Cortex-M3 processor. [1M]
- b) What is program counter? [1M]
- c) Give system exceptions. [1M]
- d) Draw the exception vector table. [1M]
- e) What is the importance of WDT? [1M]
- f) How many timers are there in LPC 17xx microcontroller? [1M]
- g) Recall about multi-port memory. [1M]
- h) List the applications of PDSP. [1M]
- i) Write a short note on TMS320C6000. [1M]
- j) Define cross path. [1M]

**PART-B**

**(50 Marks)**

2. Draw and explain the block diagram of ARM Cortex-M3 processor. [10M]
- OR**
3. Analyse the operation of three-Stage Pipeline in the ARM Cortex-M3 processor. [10M]
4. (a) Illustrate about SYSTICK Timer. [5M]  
(b) Give in detail explanation on Interrupt Latency. [5M]
- OR**
5. Explain the Interrupt inputs and pending behaviour in Cortex M3 processor with the help of timing waveforms. [10M]
6. Describe the features and functionalities of LPC 17XX general purpose I/O (GPIO). [10M]
- OR**
7. Discuss the following interfaces [10M]  
(a) RTC (b) WDT
8. Explain the architectural structure of P-DSP-MAC Unit. [10M]
- OR**
9. With neat diagram explain the Harvard architecture for programmable DSP Processors. [10M]
10. Explain the block diagram of Very Long Instruction Word (VLIW) architecture. [10M]
- OR**
11. With suitable examples explain the assembly instructions for arithmetic operations. [10M]

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