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**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FIRST SEMESTER M.TECH DEGREE EXAMINATION (Regular), FEBRUARY 2022****VLSI AND EMBEDDED SYSTEMS****(2021 Scheme)****Course Code : 21VE105-C****Course Name: DSP BASED SYSTEM DESIGN****Max. Marks : 60****Duration: 3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. What is the criteria for selection of processors for DSP applications?
2. What is the advantage of using AVR microcontroller for DSP applications?
3. What is the relevance of DAC in Digital Signal Processing?
4. What do you mean by multichannel-buffered serial ports in a microcontroller?
5. What are the features of C6713 DSK?
6. Write short notes of FIR filter design techniques.
7. What is the drawback of a non-optimized microcontroller code?
8. What are the different types of instructions for a TMS320C6713 microcontroller?

**PART B***(Answer one full question from each module, each question carries 6 marks)***MODULE I**

9. Compare and contrast Von-Neuman and Harvard architecture of microprocessors (6)

**OR**

10. a) State difference between superscalar and VLIW processors (4)  
b) Justify need for special type of processors for DSP applications (2)

**MODULE II**

11. a) What is the role of EEPROM in AVR microcontrollers (3)  
b) Write addressing modes of AVR microcontroller. (3)

**OR**

12. a) What is a Timer in a microcontroller? (3)  
b) Write how usage of timer is advantageous for certain DSP application (3)

**MODULE III**

13. Explain ADC and DAC interfacing with a AVR microcontroller (6)

**OR**

14. Justify the usage of TMS330C6000 processors for DSP applications (6)

**MODULE IV**

15. a) What is pipelining? (3)  
b) How usage of pipelining concept is advantageous in DSP applications (3)

**OR**

16. a) What is a data path? (2)  
b) Write short notes on internal data/program memory (4)

**MODULE V**

17. a) What do you mean by a discrete signal? (2)  
b) Write short notes on Window functions. (4)

**OR**

18. With neat block diagram, explain architecture of C6713 DSK (6)

**MODULE VI**

19. Write short notes on interrupts in TMS320C6713 microcontrollers (6)

**OR**

20. Compare and contrast linear and circular addressing modes in TMS320C6713 microcontrollers (6)

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