SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E - EEE
Title of the paper: Digital Signal Processing & ITS Application
Semester: V Max. Marks: 80
Sub.Code: 514502 Time: 3 Hours
Date: 24-04-2008 Session: AN

PART – A (10 x 2 = 20)

Answer All the Questions

1. Distinguish the analog and digital filters.

2. Draw the waveforms of any two discrete time sequences.

3. List the properties of FIR filter.

4. What are the types of window techniques used in digital filters?

5. What is quantization?

6. What are the advantages of binary numbers in digital systems?

7. List the special features of TMS family.

8. What is the difference between fixed point and floating point represenatation?

9. Distinguish the microcontroller and digital signal processor.

10. What are types of addressing modes in TMS processor?

PART – B (5 x 12 = 60)

Answer All the Questions

11. Explain the design procedure for designing an analog low pass filter using Butterworth approximation.

(or)

12. Realize infinite impulse response filter using cascade and parallel methods $y(n)+y(n-1)+\frac{1}{4}y(n-2)=x(n))$

13. (a) Distinguish between the I.I.R and F.I.R filter functions, giving an example of each.
(b) Draw the direct-form realization block diagram of an F.I.R filter.

(or)

14. (a) Explain the linear phase characteristics of F.I.R filter.
(b) Design a 12 tap low pass F.I.R filter for a corner frequency of 0.1.

15. Explain the errors occur due to finite word length effect in digital filters.

(or)

16. (a) Explain the effects of finite register length in implementation of a digital filter.
(b) Explain the limit cycle oscillations.

17. Draw and explain the block diagram of architecture of the DSP chip TMS 320C2407.

(or)

18. (a) State the peripheral functions available in the TMS 320C2407 DSP chip.
(b) Write short notes on pipelining.

19. (a) Give two typical DSP instructions from its instruction set.
(b) Explain the functions of TMS 320C2407 processor memory.

(or)

20. Explain the speed control of D.C motor using DSP TMS 320C2407 with neat block diagram.