SATHYABAMA UNIVERSITY
(Established under section 3 of UGC Act,1956)

Course & Branch: B. E. B. Tech – CSE/ IT
Title of the paper: Digital Computer Fundamentals
Semester: III   Max. Marks: 80
Sub.Code: 11305/12305 (2002/2003/2004/2005)   Time: 3 Hours
Date: 20-11-2006   Session: FN

PART – A   (10 x 2 = 20)
Answer ALL the Questions

1. What is mantissa and exponent? Give an example.
2. What is a parity bit?
3. What is the function of an inverter?
4. State Demorgan's theorem.
5. Compare Half adder and Full adder.
6. What are subtractors?
7. Sketch the difference between synchronous and asynchronous circuits.
8. What is meant by a trigger?
9. What is cache memory?
10. What are the basic parts of a digital magnetic tape system?

PART – B   (5 x 12 = 60)
Answer ALL the Questions

11. (a) Give the algorithm for r and (r-1)'s complement with an example. (9)

    (b) Compare 1's and 2's complement. (3)
                        (or)

12. Perform the following conversions.
    (a) Binary $(1010.011)_2$ to decimal
    (b) Decimal 41 to binary
    (c) Convert $(0.6875)_{10}$ to binary
    (d) Decimal 153 to octal

13. Simplify the Boolean function:
    $x'yz + x'yz' + xy'z + xy'z$

                              (or)
14. (a) What are Don't Care conditions?

    (b) Write short notes on Tabulation method.

15. Explain 4-bit magnitude comparator in detail.
                              (or)
16. Write short notes on Multiplexer. Sketch a logic diagram, block diagram and function table of 4 to 1 line multiplexer.

17. Explain in detail JK-flip flop, its logic diagram, characteristic table and characteristic equation.
                              (or)
18. Write short notes on the following:
    (a) Shift Registers   (b) State reduction

19. Write short notes on:
    (a) Virtual Memory   (b) Storage Hierarchy
                              (or)
20. (a) Differentiate Static and Dynamic RAM.

    (b) Short notes on Optical Storage Device.