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(2003/2004/2005) 6C0044 Time: 3 Hours
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PART – A   (10 x 2 = 20)
Answer All the Questions
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1.   Define the $(r-1)^3$ compliment of a number.

2.   Convert $(B65F)_{16}$ to Decimal.

3.   If F=x'yz' + x'y'z. Find the dual of F.

4.   Prove that x+xy=x.

5.   What is decimal adder?

6.   What is a Demultiplexer?

7.   What is the significance of a state diagram?

8.   What is a Synchronous counter?

9.   Give the Storage Hierarchy.

10. What is a Virtual memory?

Answer All the Questions

11. Use 2-s Complement to perform M-N and hence prove the same with an example.

(or)

12. Perform the following conversions.
      (a) $(8620)_{10}$ to BCD
      (b) $(8.3)_9$ to decimal
      (c) $(50)_7$ to decimal

13. Implement the following function using don't care conditions. Assume that both the normal and Complement inputs are available.
      F = A'B'C' + AB'D + A'B'CD'
      D = ABC + AB'D' with not more then two Nor gates.

(or)

14. Obtain the Sum of Expressions in Sum of Products for the Boolean function.
      BDE + B'C'D + CDE + A'B'CE + A'B'C + B'C'D'E'

15. (a) Implement a Full-adder circuit with a decoder and two OR gates.
     (b) Give the combinational circuit of a Full – Subtractor.

(or)

16. Impement the following Function with a Multiplexer.
      $F(A,B,C,D) = \Sigma (0,1,3,4,8,9,15)$

17. Design a counter with the following Binary sequence 0, 1, 3, 7, 6, 4 and repeat. Use T-filp-flops.

(or)

18. What are the different steps involved in analyzing sequential circuits?

19. With an example Explain Random Access Memory.

(or)

20. What are the different operations that are performed on Memory?