Code No. : 5141

# FACULTY OF ENGINEERING
## B.E. 3/4 (ECE) I Semester (Main) Examination, December 2011
## INTEGRATED CIRCUITS AND APPLICATIONS

Time: 3 Hours] [Max. Marks: 75

***Note :*** *Answer **all** questions from Part A. Answer **any five** questions from Part **B**.*



PART – A **(25 Marks)**

1. List different types of integrated circuits ? And what are the three operating temperature ranges of the IC ? **3**
2. Explain why open-loop configuration are not used in linear applications. **2**
3. Define the CMRR and explain to significance of a relatively large value of CMRR. **3**
4. What are the desirable features of CMOS gates ? **2**
5. What is meant by Tristate logic ? Draw the circuit of Tristate logic and explain its function. **3**
6. What is priority encoder ? Design a 4 line to 2 line priority encoder. Include an output E to indicates that least one input is a 1. **3**
7. Define the following terms as related to ADC :
   1) Conversion time
   2) Percentage resolution. **2**
8. What is the difference between RAM and ROM ? **2**
9. Implement a full adder circuit with multiplexers. **3**
10. What is shift Register ? Mention its applications. **2**

PART – B **(50 Marks)**

11. a) Design a current to voltage converter using Op-Amp and explain how it can be used to measure the output of a photo cell. **5**
    b) Design a ramp generator using 555 times having an output frequency of approximately 5 kHz. **5**

12. a) Draw the circuit for CMOS NOR Gate and explain if function to realize the logic truth table. 6

    b) Explain the operation transmission gate what are advantages over an NMOS switch. 4

13. a) Design a BCD to Excess – 3 code converter with BCD to decimal decoder and four OR gate. 6

    b) Design a parity generator using 74180 to add an odd parity bit to 7-bit word. 4

14. a) Design 3-bit binary up/down counter with direction control M.Use J – K flip-flops. 5

    b) To convert J – K to D using the conversion method. 5

15. a) Show the circuit diagram of static Bipolar cell and explain how read, write operations carried out. 5

    b) Give the block diagram of PLL and explain typical applications. 5

16. a) Draw the circuit successive approximation type ADC explain the operation of ADC. 6

    b) Gives the advantages of PLD devices. 4

17. Write short note on the following : 10

    a) Demultiplexers/ multiplexers

    b) Standard TTL series characteristics

    c) Synchronous counter is Asynchronous counter.