



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

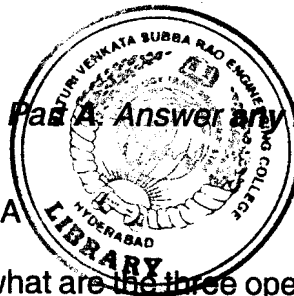
Time: 3 Hours]

[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 its 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) Give 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.