Code :EC05497 RA

III B.Tech I Semester(R05) Supplementary Examinations, May 2011
PULSE & DIGITAL CIRCUITS
(Instrumentation & Control Engineering)
(For students of RR regulation readmitted to III B.Tech I Semester R05)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Derive the expression for rise time of integrating circuit and prove that it is proportional to time constant and inversely proportional to upper 3 dB frequency.
   (b) Explain the operation of RC low pass circuit for exponential input is applied.
2. (a) The input voltage v_i to the two level clipper shown in figure 2a varies linearly from 0 to 150 V. Sketch the output voltage v_o to the same time scale as the input voltage. Assume Ideal diodes.

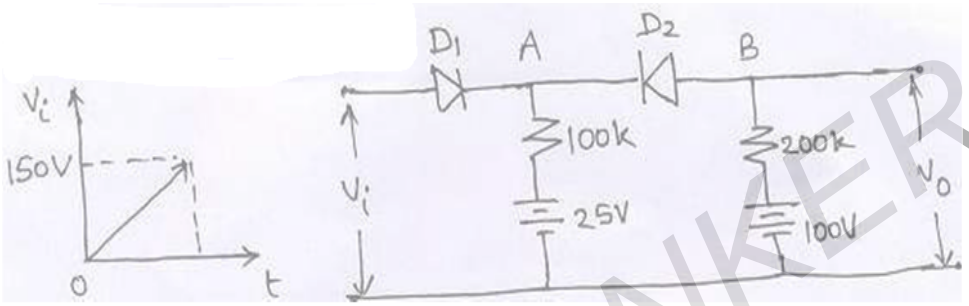

Figure 2a

   (b) Explain positive peak voltage limiters above reference level.
3. (a) Explain the behaviour of a BJT as a switch in electronic circuits. Give an example.
   (b) Write a short note on the switching times of transistor.
4. What is a monostable multivibrator? Explain with the help of a neat circuit diagram the principle of operation of a monostable multi, and derive an expression for pulse width. Draw the wave forms at collector and Bases of both transistors.
5. (a) Explain the general features of a time base generators.
   (b) Draw the circuit diagram of Transistor Miller time base generator and give the requirement of each component.
6. (a) Prove that the amplitude of sync signal can change the counting ratio of a sweep circuit used as a counter
   (b) Draw and explain the block diagram of frequency divider using modulation and regeneration.
7. (a) What is sampling gate? Explain the basic principles of sampling gates using series switch.
   (b) Draw the circuit diagram of unidirectional sampling gate using diode and explain its working.
8. (a) Give the IEEE standard, Boolean expression and truth table for a two input OR and AND gates.
   (b) Draw and explain the Circuit diagram of OR gate using emitter follower configuration.

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