

B.Tech II Year II Semester (R13) Supplementary Examinations May/June 2017

PULSE & DIGITAL CIRCUITS

(Common to ECE and EIE)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
 - (a) Sketch the waveforms of input and output when symmetrical square wave is applied to ideal integrator.
 - (b) Give reasons why inductor is rarely used in large time constant applications.
 - (c) State two applications of voltage comparators.
 - (d) Draw the clamping circuit which can clamp negative peaks of input signal to above time axis.
 - (e) State two applications of bi stable multivibrator.
 - (f) 'Astable multivibrator can be used as square wave generator', justify your answer.
 - (g) State any two methods of generating time base waveform.
 - (h) State the factors influencing stability of relaxation dividers.
 - (i) 'Logic gates are non-linear', justify your answer.
 - (j) Define gain of sampling gate.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

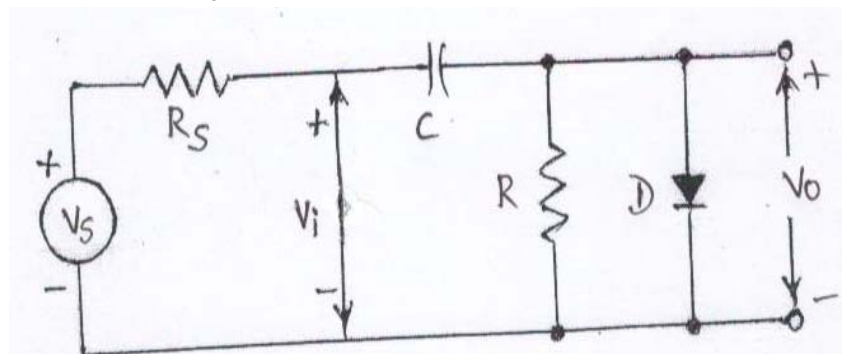
- 2 (a) Discuss the response of High pass RC circuit with the help of waveforms: (i) Step Input. (ii) Ramp input.
(b) Explain how Low pass RC circuit will act as Integrator.
- 3 (a) Discuss the response of Low pass RC circuit with the help of waveforms: (i) Step Input. (ii) Ramp input.
(b) Explain how High pass RC circuit will act as Differentiator.

UNIT – II

- 4 (a) State and prove clamping circuit theorem
(b) Draw a ideal clamping circuits for which output to satisfy following conditions:
 - (i) Positive peaks to be at zero level.
 - (ii) Negative peaks to be at zero level Assume sinusoidal input.

OR

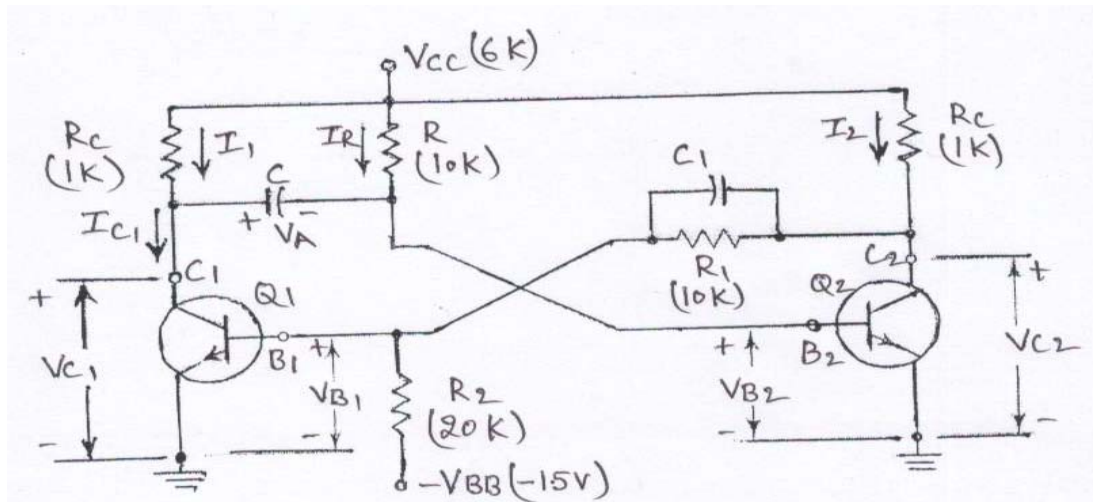
- 5 For the clamping circuit shown below, a symmetrical square wave is applied at $t = 0$ with amplitude ranging from 0 to 10 volts and frequency of 5 kHz. Compute and sketch the output waveform for first several cycles. Given values are $R_s = R_f = 100$ ohms, $R = 10$ ohms and $C = 1$ uF.



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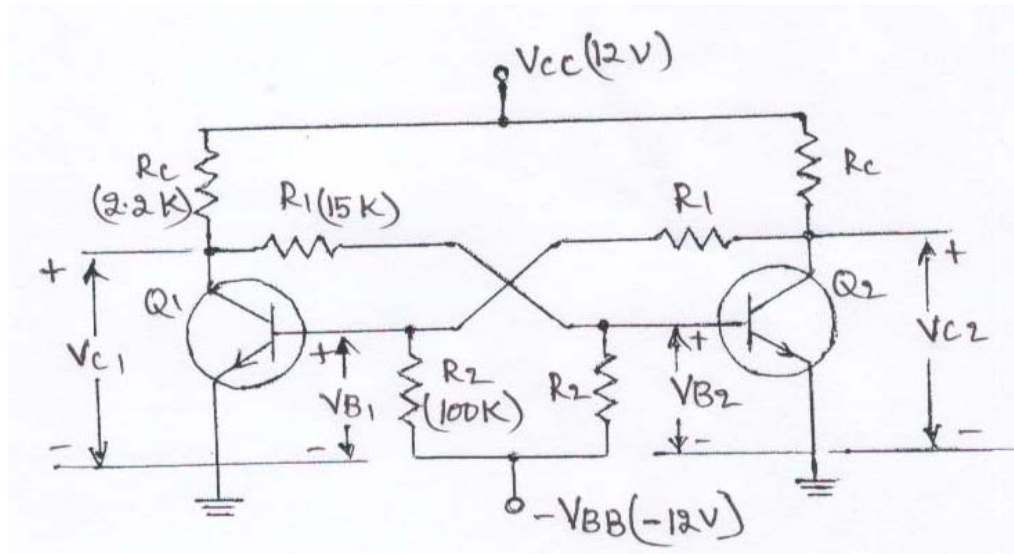
UNIT - III

- 6 Compute the voltage levels of collector coupled monostable multivibrator at bases and collectors for the circuit shown below.



OR

- 7 Calculate the stable state currents and voltages for the bistable multivibrator circuit shown below. Assume that the transistors have a minimum h_{FE} value of 20.



UNIT - IV

- 8 Explain the Millar sweep circuit. Also derive expressions for slope error and sweep speed.
OR
9 With the help of block diagram and necessary waveforms, explain about stability of relaxation dividers.

UNIT - V

- 10 Explain the bidirectional sampling gate using diodes. Derive the expression for gain.
OR
11 Draw the circuits for OR gate using diodes for negative logic & positive logic and explain the operation.
