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FIRST SEMESTER

SUPPLEMENTARY EXAMINATION

EE-502/512 Integrated Electronics and Applied Instrumentation

Roll No.....

M.Tech(C&I/PS)

February-2019

Time: 3 Hours

Max. Marks 100

NOTE: Attempt any 10 questions. All questions carry equal marks.

Q1 Realize the given Boolean expression using CMOS logic gates.

$$F = (A+B)'C$$

Q2 Find the transfer function (V_o/V_{in}) for the circuit given in figure1

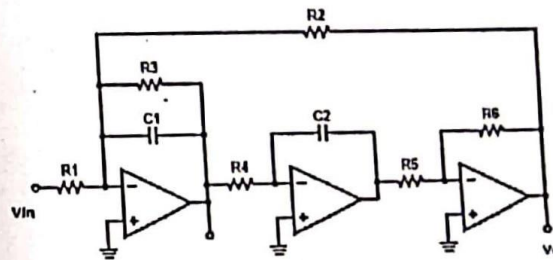


Figure 1

Q3 Find the V_o in terms of V_{in1} and V_{in2} for the circuit given in figure2

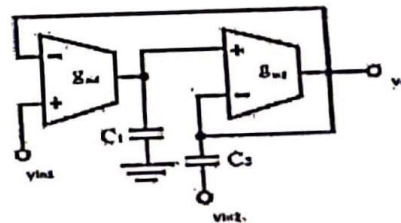


Figure2

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Q4 Explain the internal circuit of 555 timer and show how 555 timer can be used for frequency modulation.

Q12 Write short notes on any two of the following : 5X2

Q5 Draw and explain the internal structure of operational transconductance amplifier.

[a] Monostable multivibrator using IC741

[b] Grounded inductor realization using OTA

[c] Wein Bridge oscillator

Q6 Draw the circuit of a BJT differential amplifier and derive the expression of its CMRR.

Q7 Realize a grounded inductor using Op-amp and show the derivations.

END

Q8 [a] Explain the following terms in respect of Logic Families [6]

- I. Fan-out
- II. Noise Margin
- III. Propagation Delay

[b] Draw and explain the working of a TTL NAND gate [4]

Q9 Explain the functioning of a phase lock loop and describe in detail the structure of IC565. [4]

Q10 [a] Draw and analyse the circuit of a current to voltage converter using op-amp. [5]

[b] Draw and explain a peak detector circuit using op-amp. [5]

Q11 Find the transfer function (V_o/V_i) for the circuit given in figure 3. Is any filter realized with this. If yes find its cut-off frequency and quality factor.

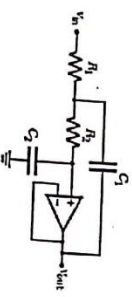


Figure 3