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Roll No. | | | | | | | | | | | | Total No. of Pages : 03

Total No. of Questions : 18

B.Tech. (ECE) (Sem.–5)

LINEAR INTEGRATED CIRCUITS

Subject Code : UC-BTEC-503-18

M.Code : 78759

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Write briefly :

1) Define virtual ground in OpAmp circuits.

2) List features of ideal OpAmp.

3) Define CMRR for OpAmp. What is typical CMRR value?

4) How does negative feedback effect input impedance in non-inverting amplifier?

5) What is the significance of slew rate in OpAmp circuits?

6) How does zero-detector circuit work?

7) What is PLL? Give an application.

8) Differentiate monostable, bistable, and astable multivibrators.

9) What are instrumentation amplifiers? List some important required features.

10) Where do we use positive feedback in OpAmp circuits? Give reasons.

SECTION-B

11) Draw labelled internal circuit diagram of OpAmp IC741.

12) Draw and explain working of OpAmp based square wave generator.

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13) Determine operating points current and voltage for the differential amplifier circuit shown in the figure. Give parameters are :

$R_{s1} = R_{s2} = 40\Omega$

$R_E = 5k\Omega$

$R_{C1} = R_{c2} = 3k\Omega$

$\beta = 100$

Both BJTs are biased using $\pm$ 10V voltage

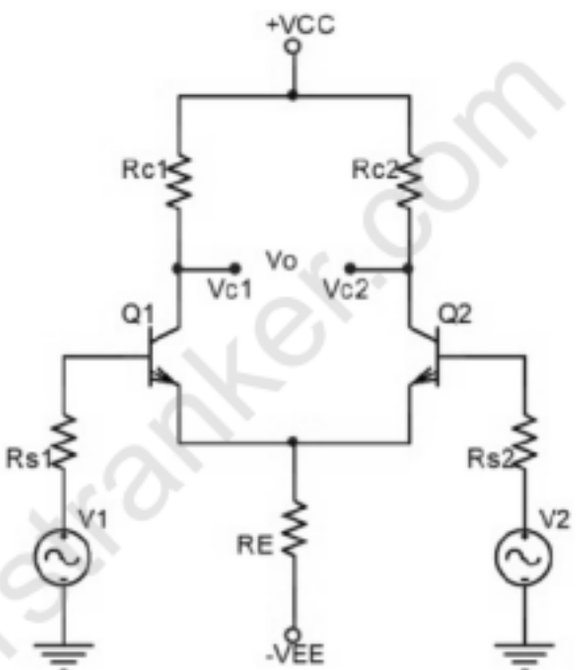

FIG.1

14) How Schmitt trigger circuit behaves as memory cell. Justify with suitable circuit and waveforms.

15) What is PLL? Explain its working principle with help of block diagram.

SECTION-C

16) Draw circuit diagrams to explain working of

a) Wein bridge amplifier

b) Saw-tooth waveform generator

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17) Derive resultant expressions for followings with the help of suitable circuits.

a) R-2R D-to-A converter

b) Summing, scaling & averaging amplifier

18) Derive expressions for the following in reference to differential amplifier circuit shown in the figure :

a) Input impedance

b) Output impedance

Given parameters are :

$R_{s1} = R_{s2} = 40\Omega$

$R_E = 5k\Omega$

$R_{C1} = R_{c2} = 3k\ \Omega$

$\beta = 100$

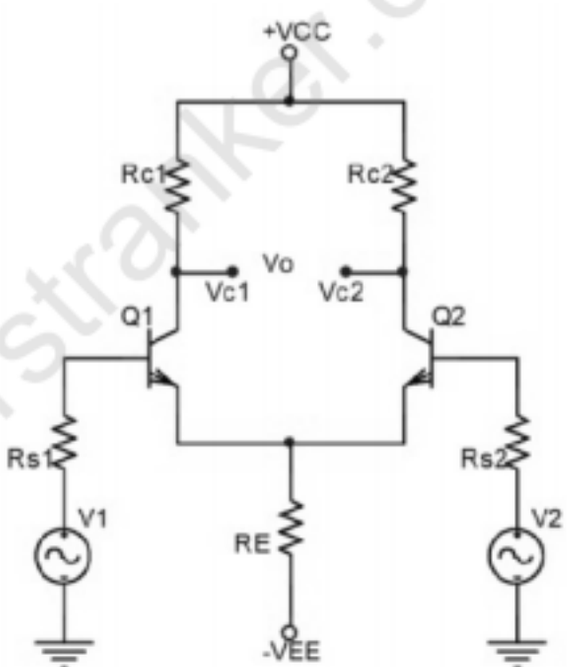

FIG.2

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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