H.T.No. | | | | | | | | | | |

Code No: EC1520 **GEC-R14**

II B. Tech II Semester Supplementary Examinations, December 2017

ANALOG CIRCUITS

(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 60**

Note: All Questions from **PART-A** are to be answered at one place.
Answer any **FOUR** questions from **Part-B.** All Questions carry equal Marks.

PART-A

6 × 2 = 12M

1. What is Millers theorem?
2. What are the advantages of double-tuned amplifier over single-tuned amplifier?
3. What is the need of differential amplifier?
4. Distinguish between negative feedback and positive feedback.
5. Write the conditions for oscillations.
6. Distinguish between class A and class B power amplifiers.

PART-B

4 × 12 = 48M

1. a) Draw the high frequency model for BJT. (3M)

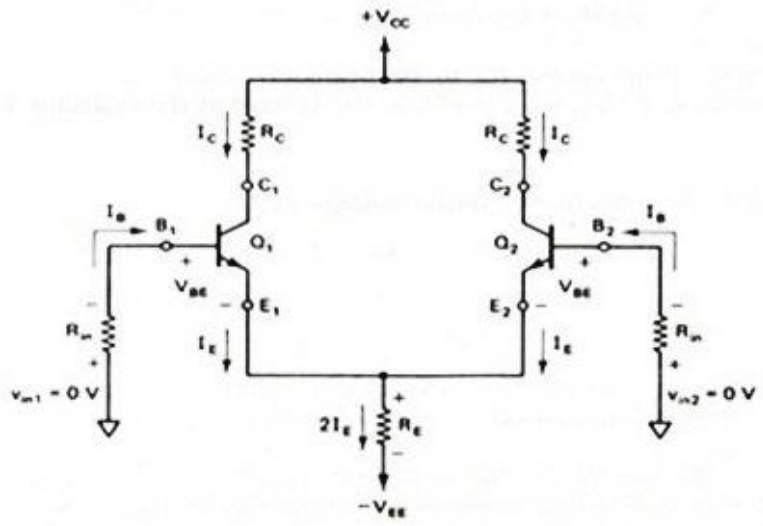
   b) Derive the expressions for the voltage gain and upper cutoff frequency of common source circuit at high frequencies. (9M)

2. a) Explain briefly the Darlington pair. (4M)

   b) Explain the neutralization technique in multi tuned amplifiers. (8M)

3. a) Explain the small-signal operation of MOS differential pair. (6M)

   b) For the following dual input, balanced output differential amplifier, calculate DC operating points. Take $V_{CC}=V_{EE}=15V$, $V_{BE}=0.2V$, $R_E=100\Omega$, $R_C=1K\Omega$. (6M)



4. a) Explain in detail about effect of negative feedback on amplifier characteristics. (6M)

   b) For a series-shunt feedback amplifier, if A=100, ß=0.1, R_i=1kΩ, R_o=50Ω, estimate R_{if}, R_{of}, A_f. (6M)

5. a) Draw the circuit diagram and derive the frequency of oscillation of BJT RC phase shift oscillator. (9M)

   b) In the Hartley oscillator L_2=0.4m H, C=0.004µF. Find L_1 if the frequency of oscillations is 120KHz. (3M)

6. a) Discuss about conversion efficiency in class A power amplifier. (6M)

   b) With a neat sketch explain the operation of class AB amplifier. (6M)

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