Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **18EC3029** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ANALYSIS AND DESIGN OF ANALOG INTEGRATED CIRCUITS** | **Max. Marks :** | **100** |

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
| **ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)** | | | | |
| 1. | a. | Arrive at the voltage gain equation for common source amplifier. And also derive the large signal analysis to obtain the change in characteristics of MOS. | CO1 | 8 |
| b. | Find the voltage gain of the common source amplifier with VDD=5V, load resistance is 5Kohms, k=100µA/V2 , W=50µm, L=1µm, Vt= 0.8V. Assume that the bias value of V is 1V. Determine whether the transistor operates in the active region. | CO1 | 8 |
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| 2. | a. | Derive the expression for voltage gain of cascade amplifier and obtain the small signal model. | CO1 | 4 |
| b. | Interpret the common source amplifier with resistive load and active load and derive the large signal and small signal merits and demerits. | CO1 | 8 |
| c. | List the different modes of operation of differential amplifier Ideal  V-I  Characteristics. | CO2 | 4 |
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| 3. |  | Derive the differential mode and common mode gain of a balanced output differential amplifier. | CO6 | 16 |
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| 4. |  | With a suitable circuit diagram, explain the Four Quadrant Variable Transconductance Multiplier circuit. Also, prove its function quantitatively. | CO6 | 16 |
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| 5. |  | Assess the different noise in an analog circuit and give the different types of noises? Also analyze the occurrence of noise in cascade amplifier. | CO3 | 16 |
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| 6. |  | Explain in detail the various regions of frequency response of a typical multistage amplifier. | CO5 | 16 |
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| 7. | a. | Describe the types of Topologies of Feedback circuits with neat block diagram. | CO4 | 12 |
| b. | Calculate the output resistance of a double cascade amplifier circuit to sink 10uAcurrent. | CO2 | 4 |
| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Compare the parameters of ideal OPAMP with pratical OPAMP. | CO5 | 10 |
| b. | Explain the different blocks of a typical PLL. | CO5 | 10 |