

Reg. No. \_\_\_\_\_ Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
FOURTH SEMESTER B.TECH DEGREE EXAMINATION, JUNE 2017

Course Code: **EC204**Course Name: **ANALOG INTEGRATED CIRCUITS (AE, EC)**

Max. Marks: 100

Duration: 3 Hours

**PART A***Question No.1 is compulsory. Answer question 2 or 3*

1. a. Define the following terms (6)
  - i) CMRR
  - ii) Slew rate
  - iii) PSRR
- b. Design a circuit to obtain an output voltage of  $-(V_1 + 2V_2 + 5V_3)$  (5)
- c. Derive the following characteristics of voltage series feedback amplifier. (4)
  - i) Closed loop gain
  - ii) Input impedance
  - iii) Output impedance
  - iv) Bandwidth
2. a. Explain in detail a method of improving CMRR of differential amplifier. (10)
- b. Explain the various stages of op-amp. (5)

**OR**

3. Draw an instrumentation amplifier using four op-amps and explain the need for each op-amp. Derive the expression for its output voltage. (15)

**PART B***Question No.4 is compulsory. Answer question 5 or 6.*

4. a. Explain the working of precision full wave rectifier with a neat diagram. (7)
- b. Draw a second order active high pass filter and derive the expression for its cut off frequency. (8)
5. a. With the help of a neat diagram, derive the frequency of oscillation for RC phase shift oscillator. (10)
- b. Draw the circuit of antilog amplifier and derive the output voltage. (5)

OR

6. a. Explain in detail the working of Schmitt trigger and explain the transfer characteristics. (8)
- b. Design a first order low pass filter with a cut off frequency of 2kHz. (7)

## PART C

*Question No.7 is compulsory. Answer question 8 or 9.*

7. a. Discuss in detail any two applications of PLL. (5)
- b. Write a short note on IC723 based voltage regulators (5)
- c. Explain the working of dual slope A/D converters. (10)
8. a. Explain in detail the working of monostable and astable multivibrator using 555. (10)
- b. Discuss different methods for implementing analog multipliers. (5)
- c. Explain the working of high speed sample and hold switch. (5)

OR

9. a. Derive the output voltage for a 4 bit R-2R ladder D/A converters (10)
- b. Explain the working of successive approximation type A/D converters. (7)

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