

5E5022

Roll No. _____

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B. Tech. V Sem. (Main/Back) Exam., Nov.-Dec.-2016
Electronics & Communication Engineering
5EC2A Linear Integrated Circuits
Common with EC

Time: 3 Hours**Maximum Marks: 80****Min. Passing Marks Main: 26****Min. Passing Marks Back: 24***Instructions to Candidates:*

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

(Mentioned in form No.205)

1. NIL _____2. NIL _____**UNIT - I**

Q.1 (a) Define and explain the following OP-AMP parameters -

[8]

(i) CMRR

(ii) Bias current

(ii) Slew rate

(iv) Input offset voltage

(b) With a circuit diagram, explain how dc level shifting operation is performed. Why is it needed in OP-AMP? **[8]**

OR

- Q.1 Draw and explain the working of JFET differential Amplifier. Also draw and explain curve between I_D and differential input voltage. Also prove that $A_{dm} = -g_m R_D$. [16]

UNIT – II

- Q.2 (a) Draw the circuits of Ideal Integrator and Lossy Integrator. Also draw and explain their frequency response. [8]
- (b) Design a triangular wave generator using a comparator circuit with integrator to generate a triangular wave of frequency 5KHz. Assume the peak to peak output voltage is 5V and saturation voltage are $\pm 14V$. [8]

OR

- Q.2 (a) Draw the circuit diagram of Wien bridge oscillator and find expression for frequency of oscillation. [8]
- (b) Explain the working of voltage to frequency converter (V/F). [8]

UNIT – III

- Q.3 (a) What are switched capacitor networks? Why do you need switched capacitor filters when you have conventional filters? [8]
- (b) Design a phase shift oscillator using OP-AMP 741 for $F_0 = 200$ Hz. [8]

OR

- Q.3 (a) Design a second order Butter Worth low pass filter having upper cut off frequency 1 KHz. [8]
- (b) Draw the circuit diagram of Twin-T notch narrow band Reject Filter and derive expression for cut-off frequencies. [8]

UNIT – IV

- Q.4 (a) Write a brief note on Schmitt Trigger. Also compare its performance with Zero Crossing detector. [8]
- (b) What are various operating modes of 555 IC? Also explain the working principle of free running multi vibrator. [8]

OR

- Q.4 (a) Write short note on Three Terminal Voltage Regulators. [8]
- (b) Explain the working and application of Four Quadrant Multiplier. [8]

UNIT – V

- Q.5 (a) Explain the application of PLL as- [4x4=16]
- (i) FM detector
 - (ii) FSK demodulator
 - (iii) Frequency translator rtuonline.com
 - (iv) Phase shifter

OR

- Q.5 Write short note on following :-
- (a) LOCK Range and CAPTURE Range of PLL [8]
 - (b) Block diagram and operation of PLL. [8]
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