Seat No.

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OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Linear integrated Circuits

Sub. Code: 79182/79470

Day and Date: Monday ,08-12-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**

Special Inst.: Use of non-programmable calculator is allowed

Q1) Solve the following MCQs **[14]**

a. Open loop configuration is not preferred in op-amps because **[2]**
A) First break frequency is too large B) First break frequency is very small
C) Second break frequency is too large D) All of the mentioned

b. The gain of the first order low pass filter **[2]**
A) Increases at the rate 20dB/decade B) Increases at the rate 40dB/decade
C) Decreases at the rate 20dB/decade D) Decreases at the rate 40dB/decade

c. Calculate the frequency of oscillation for RC phase shift oscillator having the value of R and C as 35Ω and 3.7μF respectively. **[2]**
A) 1230Hz B) 204Hz
C) 502Hz D) 673Hz

d. Which of the following is/are applications of op-amp **[2]**
A) Oscillators B) Rectifiers
C) Integrator D) All of the above

e. In the circuit of Schmitt Trigger, R1=100Ω, R2=56KΩ, Vin=1V(P-P) sine wave and the op-amp is type 741 with supply voltage = 15V to -15V. Calculate the threshold voltages Vlt. **[2]**
A) 50 mV B) 25 mV
C) -25mV D) -50mV

f. One input terminal of high gain comparator circuit is connected to ground and a sinusoidal voltage is applied to the other input. The output of comparator will be **[2]**
A) A sinusoid B) A full rectified sinusoid

C) A half rectified sinusoid D) a square wave

g. Once the phase is locked, the PLL tracks the variation in the input frequency. This indicates that _____ **[2]**

A) Output frequency changes by same amount as that of input frequency
B) Output frequency does not change as that of input frequency
C) There is no relation between input & output frequencies
D) None of the above

Q2) Answer Any TWO. **[14]**

a. Draw and explain dual input balanced output differential amplifier with DC-analysis. **[7]**

b. What is Frequency Compensation? Explain any one of Compensation Technique. **[7]**

c. Explain summing scaling and averaging amplifier using op amp **[7]**

Q3) Answer Any TWO. **[14]**

a. Explain the need of level shifting stage and explain any one circuit used for level shifting. **[7]**

b. Derive the equation for voltage gain in non-inverting amplifier with feedback. **[7]**

c. Draw and explain schmitt trigger using IC741 with waveforms **[7]**

Q4) Answer Any TWO. **[14]**

a. Design the RC phase shift oscillator for oscillating frequency fo = 200 Hz. Assume C = 0.1 uF. **[7]**

b. Design a wide band pass filter with fL = 200 Hz, fH= 1 kHz and a pass band gain = 4. Draw the frequency response plot and calculate Q. **[7]**

c. Explain timer IC 555 as Monostable Multivibrator with neat circuit diagram and waveform **[7]**

Q5) Answer Any TWO. **[14]**

a. Draw and explain triangular wave Generator using op-amp. **[7]**

b. Explain All Pass Filter **[7]**

c. Explain IC 565 PLL **[7]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (79182) Linear integrated Circuits Part 2 SEM 4

2] (101) Bachelor of Engineering (79470) Linear integrated Circuits Part 2 SEM 4