


Final Assessment Test – April 2026

Course: BEEE208L - Analog Electronics

Class NBR(s): 2253 / 2345

Time: Three Hours

Slot: A2+TA2

Max. Marks: 100

- KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

COs	CO Statements
CO1	Interpret the concepts of power amplifiers.
CO2	Compare and analyze the design aspects of differential amplifiers.
CO3	Design the frequency of oscillation for different oscillators.
CO4	Analyze the performance characteristics and applications of Op-Amp.
CO5	Design ADCs, DACs and timer circuits for engineering applications.

BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

 Answer ALL Questions

(10 X 10 = 100 Marks)

- Discuss in detail about the role and importance of heat sinks for power amplifiers. CO1 BL2
- Derive the efficiency of Class-B push-pull amplifier with proper diagram and explain. CO1 BL3
- The Op-Amp shown in Fig.(1) has a slew rate of $0.8 \text{ V}/\mu\text{s}$. The input signal is $0.25\sin(\omega t) \text{ V}$. Determine the maximum frequency of input in kHz for which there is no distortion. CO4 BL4

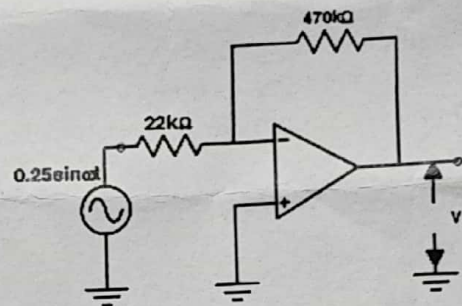


Fig.(1)

- What are the properties of an ideal Op-Amp? Determine the output voltage in the ideal Op-Amp circuit shown in Fig.(2). CO4 BL

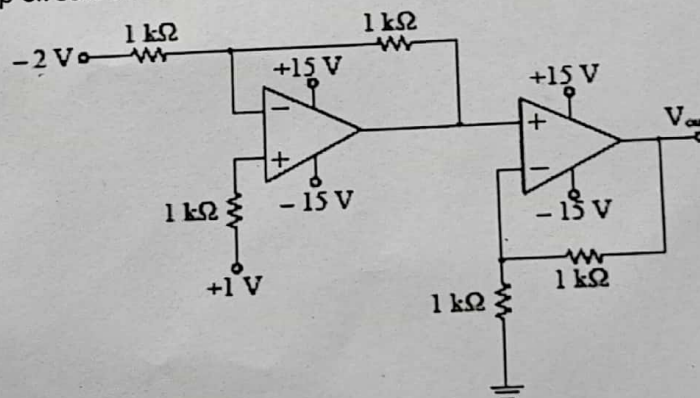


Fig.(2)

5. Discuss in detail about the Hartley oscillator with neat circuit diagram and derive the frequency of oscillation. CO3 BL3
6. Draw and explain the working of Wein-Bridge oscillator using neat circuit diagram. CO3 BL2
7. A square wave is applied as input. What is the response provided by differentiator and integrator designed using ideal Op-Amps? Derive the input-output relations in each case and draw the circuit & waveforms. CO4 BL3
8. With neat circuit diagram and explain the working of half wave and full-wave precision rectifier. Also sketch the necessary wave forms. CO4 BL2
- 9.a) What are the advantages and disadvantages of cascode amplifier? Discuss in briefly the cascode and folded cascode topologies with neat circuit diagram. CO2 BL
- OR
- 9.b) With neat circuit diagram and derive the CMRR of differential pair having tail current source and is tied to resistive load. CO2 B
- 10.a) Design a 3-bit R-2R ladder DAC whose feedback resistor value is $2\text{ k}\Omega$, with reference voltage -8 V . Draw the complete circuit and label the correct values for all other resistors. CO5 E
- OR
- 10.b) An astable multivibrator circuit built using 555-timer is designed in such a manner that $R_A = R_B = 1\text{ k}\Omega$ and $C = 1\mu\text{F}$. Find the frequency of oscillation and draw the circuit to convert it to a symmetric square wave. Also, find T_{ON} , T_{OFF} & Duty cycle. CO5 E

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