Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

Term Evaluation (Even) Semester Examination March 2025

Roll no.....

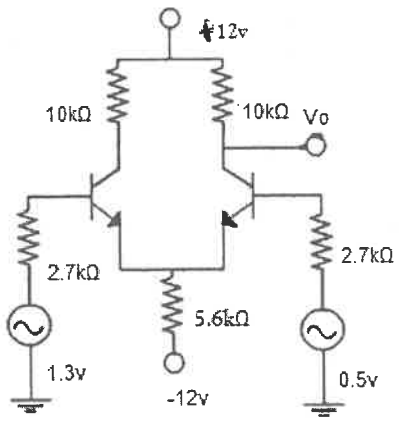
Name of the Course: B.Tech (ECE)
Semester: **IV**
Name of the Paper: ***Analog circuits***
Paper Code: **TEC 402**
Time: 1.5 hour **Maximum Marks: 50**

Note:
(i) Answer all the questions by choosing any one of the sub-questions
(ii) Each question carries 10 marks.

Q1. CO1 (10 Marks)
(10 Marks)
a. With the help of proper diagram do DC analysis of Dual input balanced output differential amplifier. Draw all the configuration of Differential amplifier with mentioning its gain, I/P resistance and O/P resistance.

OR

b. For the circuit shown below, determine the Output voltage (Assume β=5, differential input resistance=12 kΩ)



Q2. CO1 (10 Marks)
a. Explain constant current bias and its utility in differential amplifier.

OR

b. Discuss the significance of active load in a differential amplifier with detailed circuit description.

Q3. CO1 and 2 (10 Marks)
a. The 741C OP-Amp having the following parameters is connected as a non inverting amplifier with R_1=1KΩ and R_f=10KΩ,A= 200000, Ri= 2MΩ, Ro= 75Ω, supply voltages of magnitude 15 V and output voltage swing is +- 13V. Calculate the values of A_F, R_{iF},R_{oF}

OR

b. Explain the integrator by using Op-Amp.

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Q4. CO2 (10 Marks)

a. Explain the compensating LOG amplifier.

OR

b. Explain positive feedback comparator with positive reference. In Schmitt trigger R_2 =100Ω, R_1 = 50KΩ, V_{ref} =0V, V_i =1Vpp sine wave and saturation voltage =+- 10V. Determine threshold voltages V_{UT} and V_{LT}.

Q5. CO2 (10 Marks)

a. Explain half wave and full wave precision rectifiers.

OR

b. Design a first order Low Pass Filter at cut-off frequency 1KHz with passband gain of 2.Using the frequency scaling convert the 1KHz cut-off frequency to cut-off frequency of 1.6 KHz