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**Question Paper Code: R3305**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Third Semester

Electrical and Electronics Engineering

R21UEE305 - LINEAR IC APPLICATIONS

(Regulations R2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

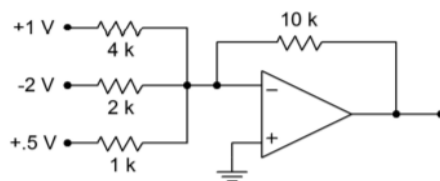
PART A - (10 x 2 = 20 Marks)

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|--|-------|
| 1. Why Aluminum is preferred for metallization?  | CO1 U |
| 2. Identify IC's on the basis of chip size and circuit complexity.                         | CO1 U |
| 3. Draw the 8 pin Diagram of IC741?  | CO1 U |
| 4. Design an amplifier with gain of +5 and input resistance 10k $\Omega$ using one op-amp. | CO1 U |
| 5. List the features of instrumentation amplifier.   | CO1 U |
| 6. Illustrate are the applications of comparator?  | CO1 U |
| 7. Give the pin details of IC555.  | CO1 U |
| 8. Define lock-in range of a PLL.  | CO1 U |
| 9. What is a voltage regulator.  | CO1 U |
| 10. Give the classification of voltage regulators.   | CO1 U |

PART – B (5 x 16= 80 Marks)

- |   |       |      |
|---|-------|------|
| 11. (a) Illustrate the following below: | CO1 U | (16) |
| 1. Epitaxial Growth Process.            |       |      |
| 2. Diffusion Process                    |       |      |
| Or                                      |       |      |
| (b) Illustrate the following below:     | CO1 U | (16) |
| 1. Silicon wafer preparation            |       |      |
| 2. Oxidation                            |       |      |

12. (a) Calculate the output of the summing amplifier in figure below, with the given DC input voltages. CO2 App (16)



Or

- (b) Design the Operational Amplifier Circuit in which the gain is negative. Values of Input Resistor are 10K ohm. Feedback Resistor is 100K ohm, Input Voltage is 1V, A load of 25K ohm is connected to the output terminal. Calculate i) Input Current ii) Output Voltage iii) Load Current and iv) Total Current  $i_o$ . CO2 App (16)
13. (a) Design an amplifier circuit which has high CMRR, very low DC offset, and high open loop gain. CO3 App (16)
- Or
- (b) Design a circuit to generate square wave simultaneously with the frequency of 1KHz. CO3 App (16)
14. (a) Design a circuit to generate one pulse with the frequency of 1KHz using 555 Timer. CO4 App (16)
- Or
- (b) Construct the circuit which has two quasi-stable states using IC555 and derive the frequency of output signal. CO4 App (16)
15. (a) Explain the functional Block diagram of LM317 and its applications. CO5 U (16)
- Or
- (b) Draw the functional diagram of LM 723 voltage regulator and explain the function of each part. How current regulation is achieved in the regulator? CO5 U (16)