

Roll Ticket Number:

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Code No. : 15345 S O

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
Accredited by NAAC with A++ Grade

B.E. (E.E.E.) V-Semester Supplementary Examinations, June-2023

Linear Integrated Circuits and Applications

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

| Q. No. | Stem of the question | M | L | CO | PO |
|----------------------------------|---|---|---|----|----|
| 1. | Draw the non inverting op-amp circuit diagram and write its output voltage empirical relation. | 2 | 2 | 1 | 1 |
| 2. | Define CMMR and give its ideal and practical values. | 2 | 2 | 1 | 1 |
| 3. | Give some limitations of op-amp as a comparator. | 2 | 4 | 2 | 1 |
| 4. | Draw the circuit diagram of zero crossing detector. | 2 | 2 | 2 | 1 |
| 5. | Mention the importance of voltage-controlled oscillator? | 2 | 2 | 3 | 1 |
| 6. | Define captured range frequency. | 2 | 1 | 3 | 1 |
| 7. | Discuss voltage regulators. | 2 | 2 | 4 | 1 |
| 8. | Differentiate between fixed voltage regulators and switching voltage regulators. | 2 | 4 | 4 | 1 |
| 9. | What is the purpose of lead/lag compensators using Opamp. | 2 | 1 | 5 | 1 |
| 10. | Draw the circuit diagram of first order low pass filter. | 2 | 2 | 5 | 1 |
| Part-B (5 × 8 = 40 Marks) | | | | | |
| 11. a) | Explain the concept of level translator in detail. | 4 | 1 | 1 | 1 |
| b) | Draw the circuit diagram of differentiator by using IC 741 and explain its operation. | 4 | 2 | 1 | 1 |
| 12. a) | Draw the block diagram of log Amplifiers and explain its operation in detail. | 4 | 2 | 2 | 1 |
| b) | Discuss the operation of clipper circuits using Opamp. | 4 | 2 | 2 | 1 |
| 13. a) | Draw and explain the principles and description of individual blocks of PLL in detail. | 4 | 4 | 3 | 1 |
| b) | Draw the circuit diagram of Monostable multivibrator by using IC 555 timer and explain its operation. | 4 | 4 | 3 | 1 |

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| 14. a) | Discuss switching voltage regulators using Opamp. | 4 | 4 | 4 | 1 |
| b) | Explain the operation of dual tracking voltage regulators. | 4 | 1 | 4 | 1 |
| 15. a) | Design a first order high pass filter with a cutoff frequency of 1KHz and pass band gain of 11. | 4 | 3 | 5 | 1 |
| b) | Draw and Explain notch filter operation. | 4 | 2 | 5 | 1 |
| 16. a) | Design the summer and difference amplifier using IC 741 and explain its operation. | 4 | 3 | 1 | 1 |
| b) | Draw the Instrumentation amplifier and explain its operation in detail. | 4 | 4 | 2 | 1 |
| 17. | Answer any <i>two</i> of the following: | | | | |
| a) | Explain wein bridge oscillator with neat diagram. | 4 | 1 | 3 | 1 |
| b) | Draw the circuit diagram of series voltage regulators and explain its operation. | 4 | 2 | 4 | 1 |
| c) | Explain the operation of PI controllers using Opamp. | 4 | 1 | 5 | 1 |

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

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| i) | Blooms Taxonomy Level - 1 | 20% |
| ii) | Blooms Taxonomy Level - 2 | 40% |
| iii) | Blooms Taxonomy Level - 3 & 4 | 40% |
