

JAWAHARLAL NEHRUTECHNOLOGICAL UNIVERSITY-GURUJADA VIZINAGARAM
II B. Tech II Semester Supplementary Examinations November-2025
ANALOG CIRCUITS
(EEE)

Time: 3 hours**Max. Marks: 70**

The Question paper consists of Part A & Part B.

Part A is compulsory, Answer all questions. Part B Answers any one question from each unit.

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| 1 | PART-A | (20Marks) |
| | a) What is the difference between clipping and clamping? | [2] |
| | b) Define Thermal runaway. | [2] |
| | c) Draw the small signal low frequency h-parameter model of a CB Transistor | [2] |
| | d) Draw the topologies in negative feedback. | [2] |
| | e) Why LC oscillators are not used at low frequencies. | [2] |
| | f) List out ideal and practical characteristics of Op-amp. | [2] |
| | g) Draw the integrator circuit and derive its output equation. | [2] |
| | h) Draw the V to I and I to V convertor. | [2] |
| | i) What are the various applications of VCO 566? | [2] |
| | j) What are the basic DAC techniques? | [2] |
| | PART-B | |
| | | (50Marks) |
| | Question from Unit - I | |
| 2 | a) Explain the operation of practical clamper circuit for varying input amplitude | [5] |
| | b) Explain the operation of a positive clamper for sinusoidal input. | [5] |
| | (OR) | |
| 3 | a) What is Biasing? Explain the need of it. List out different types of biasing methods | [5] |
| | b) Calculate the quiescent current and voltage of collector to base bias arrangement using the Following data: $V_{cc} = 10\text{ V}$, $R_b = 100\text{ K}$, $R_c = 2\text{ K}$, $\beta = 50$ and also specify a value of R_b so that $V_{ce} = 7\text{ V}$. | [5] |
| | Question from Unit - II | |
| 4 | a) Give the approximate H-parameter conversion formulae for CC and CB configuration in terms of CE. | [5] |
| | b) Give the advantages of H-parameter analysis. | [5] |
| | (OR) | |
| 5 | a) Explain the concept of feedback with block diagram. What are the advantages and disadvantages of negative feedback? | [5] |
| | b) An amplifier has a gain of 50 with negative feedback. For a specified output voltage, if the input required is 0.1V without feedback and 0.8V with feedback, Compute β and open loop gain | [5] |
| | Question from Unit - III | |
| 6 | a) With the help of suitable schematic explain the operation of a Wien Bridge oscillator and derive an expression for its frequency of operation. | [5] |
| | b) State and explain barkhausen criterion. | [5] |
| | (OR) | |
| 7 | a) Explain the IC 741 op-amp block diagram & its features in detail. | [5] |
| | b) Explain different frequency compensation techniques of op-amp in detail | [5] |
| | Question from Unit - IV | |
| 8 | a) Draw the block diagram of log Amplifiers and explain its operation in detail. | [5] |
| | b) Explain the operation of Square wave generators along with circuit diagram | [5] |
| | (OR) | |
| 9 | a) Draw the Anti log Amplifiers circuit diagram and derive its output voltage in detail. | [5] |

- b) Draw the Instrumentation amplifier and explain its operation in detail. [5]

Question from **Unit - V**

- 10 a) Draw the block diagram of Astable operations using IC 555 and derive its time constant [5]

- b) Draw the block diagram of PLL and explain the operation of individual blocks in detail. [5]

(OR)

- 11 a) Draw the block diagram of successive approximation ADC and explain its operation in detail. [5]

- b) Draw the circuit diagram of counter type ADC and explain its operation in detail [5]
