

Enrollment No: _____

Exam Seat No: _____

C. U. SHAH UNIVERSITY

Winter Examination-2022

Subject Name : Linear Electronics

Subject Code : 4TE03LNE1

Branch: B.Tech (CE)

Semester: 3

Date: 11/01/2023

Time: 02:30 To 05:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1 Attempt the following questions: (14)

- a) A transistor has _____ PN junctions.
- b) In a transistor, $I_C = 95 \text{ mA}$ and $I_E = 100 \text{ mA}$. The value of α is _____.
- c) Define : Faithful amplification
- d) In class A amplifier, the operating point _____ on d. c. load line.
A) Cut-off B) Middle C) Saturation D) None
- e) A two transistor class-B power amplifier is commonly called _____ amplifier.
A) Dual B) Push-pull C) Symmetrical D) Differential
- f) What is feedback in amplifier?
- g) When negative voltage feedback is applied to an amplifier, its voltage gain increases or decreases?
- h) What do you understand by negative feedback?
- i) An open loop gain of an ideal op-amp is _____.
- j) Define the term CMRR.
- k) Draw the circuit of unity gain follower using op-amp.
- l) True / False: In positive feedback phase difference between input and output is 180° .
- m) Which oscillator has highest stability?
A) Colpitt's B) Hartley C) Crystal D) None
- n) What is oscillator?

Attempt any four questions from Q-2 to Q-8

Q-2 Attempt all questions (14)

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| A | Explain in detail fixed base biasing technique with circuit diagram. | 07 |
| B | Explain in detail with diagram voltage divider bias method. | 07 |



Q-3	Attempt all questions	(14)
A	Derive the relation between α and β . Calculate the value of I_E , I_C and α in a transistor for which $\beta = 100$ and $I_B = 30\mu A$.	07
B	Explain in detail dc load line and operating point with diagram for CE circuit. In CE circuit, if $V_{CC} = 12V$ and $R_C = 6 k\Omega$, draw the dc load line.	07
Q-4	Attempt all questions	(14)
A	Draw and explain the circuit diagram of class-B push-pull amplifier.	07
B	Explain various performance quantities of power amplifier.	07
Q-5	Attempt all questions	(14)
A	Explain in detail with diagram inverting and non-inverting amplifier using Op-amp.	07
B	Explain H-parameter model of CE amplifier.	07
Q-6	Attempt all questions	(14)
A	Explain in detail summing amplifier using Op-Amp with neat circuit diagrams.	07
B	Explain in detail Integrator using Op-Amp with neat circuit diagram.	07
Q-7	Attempt all questions	(14)
A	Explain advantages of negative feedback amplifier.	07
B	Derive an expression for the gain of negative feedback amplifier.	07
Q-8	Attempt all questions	(14)
A	Explain with the help of circuit diagram working of RC phase shift oscillator.	07
B	Explain with the help of circuit diagram working of Colpitt's oscillator	07

