Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY

Summer Examination-2022

Subject Name : Linear Electronics

Subject Code : 4TE03LNE1 **Branch: B.Tech (CE)**

Semester: 3 **Date: 25/04/2022** **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 **Define/Attempt the following questions:** **(14)**

a) Faithful amplification
b) Positive feedback
c) Virtual ground
d) Stability factor
e) Thermal runaway
f) Input offset voltage of Op-Amp
g) Slew rate.
h) What is the difference between hfe and hoi?
i) Harmonics
j) Q point
k) Offset nulling
l) Need of biasing
m) Draw the circuit of unity gain follower using IC-741.
n) Why crystal has highest stability?

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

Q-2 **Attempt all questions** **(14)**

A Explain in detail current shunt feedback amplifier with circuit diagram. **07**
B Derive the equation of overall gain for positive feedback. **07**

Q-3 **Attempt all questions** **(14)**

A Explain H-parameter model of CE amplifier. **07**
B Explain with a diagram, the working of a class C power amplifier. **07**

Q-4 **Attempt all questions** **(14)**

A Explain with the help of circuit diagram working of Colpitts oscillator. **07**
B Explain distortion in power amplifier. **07**

Q-5		**Attempt all questions**	**(14)**
	A	Explain Hartley oscillator with necessary diagram	**07**
	B	Draw the circuits of class-B push-pull amplifier. Derive the efficiency of class B power amplifier.	**07**
Q-6		**Attempt all questions**	**(14)**
	A	Draw and explain in detail voltage series feedback amplifier.	**07**
	B	What is positive feedback? How positive feedback is achieve in RC phase shift oscillator. Explain RC phase shift oscillator.	**07**
Q-7		**Attempt all questions**	**(14)**
	A	State and explain in detail with illustrations different conditions to be fulfilled to achieve faithful amplification in a transistor amplifier.	**07**
	B	Explain op-amp as differentiator with necessary waveforms.	**07**
Q-8		**Attempt all questions**	**(14)**
	A	Explain with the help of circuit diagram working of crystal oscillator.	**07**
	B	State different transistor connection circuits. Draw the CB circuit and derive the equation of current amplification factor α and collector current I_C. In a CB connection, α is 0.9. If the I_E is 1mA, determine the value of I_B.	**07**