Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY

Summer Examination-2022

Subject Name : Integrated Circuits & Applications

Subject Code : 4TE04ICA1 **Branch: B.Tech (Electrical)**

Semester: 4 **Date: 04/05/2022** **Time: 11:00 To 02:00** **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) State the name of various building block of opamp 741C.
b) The 741 IC means that the opamp is designed for commercial applications. (True/False).
c) For various temperature ranges the opamp has different IC. (True/False)
d) The bandwidth of 741 IC is 0.1 MHz (True/False)
e) The input impedance of an ideal opamp is _____. (a) Infinite (b) Zero (c) Few kilo ohm (d) Few hundred ohms.
f) If slew rate of opamp is high it is much sensitive.(True/False)
g) The opamp 741 has ____ biasing pins. (a) One (b) Two (c) Three (d) Eight.
h) The integral of square wave is ramp signal (True/False)
i) The differential amplifier converts the sine wave into _____. (a) Square (b) pulse (c) Cosine (d) sine
j) Decibel is the unit of _____ gain. (a) Voltage (b) Current (c) Power (d) ALL
k) The 555 timer has only one operating mode. (True/False)
l) State any two applications of 555 timer circuit.
m) If 1 mv signal is given to open loop opamp what will be the output
n) State any two type of filter configuration using opamp.

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

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

(a) Discuss the operation of 555 timer in a stable mode. **(7)**
(b) Draw the pin diagram of opamp 741 C. Explain the function of each. **(7)**

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

(a) State the name of any five parameters those are listed on opamp data **(7)**

sheet. Explain any two.

(a) State the characteristics of an ideal opamp **(7)**

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

(a) State and explain equivalent circuit of an opamp. **(7)**

(b) Explain the inverting mode operation of opamp with negative feedback **(7)**

Q-5 **Attempt all questions** **(14)**

(a) Derive the equation of closed loop voltage gain for inverting configuration with feedback. **(7)**

(b) State the name of any five parameters those are listed on opamp data sheet. Explain any two. **(7)**

Q-6 **Attempt all questions** **(14)**

(a) Discuss the closed loop frequency response of an opamp. **(7)**

(b) Discuss the low voltage a.c. voltmeter application using opamp. **(7)**

Q-7 Attempt all questions **(14)**

(a) Discuss the operation of summing amplifier using opamp. **(7)**

(b) Discuss the operation of integrator using opamp. **(7)**

Q-8 **Attempt all questions** **(14)**

(a) Briefly discuss about the following: (a) Gain bandwidth product (b) Slew rate (c) Common mode rejection ratio. **(7)**

(b) Discuss the operation of first order filter using an opamp. **(7)**