Enrollment No: _____ Exam Seat No: _____

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name: Analog and Digital Electronics

Subject Code: 4SC04ADE1 **Branch: B.Sc. (Chemistry, Physics)**

Semester: 4 **Date: 08/10/2018** **Time: 10:30 To 1:30** **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)	Give full form of MOSFET and draw its symbol.	1
b)	What do you mean by stabilization in a transistor?	1
c)	What is CMRR in Op-Amp operation?	1
d)	Define voltage gain of an amplifier.	1
e)	Give the working of an Amplifier	1
f)	What is Op-Amp?	1
g)	Give Barkhausen's criterion for self-sustained oscillations.	1
h)	What is the value of input resistance for an ideal Op-Amp circuit?	1
i)	List the names of the basic logic gates.	1
j)	What is phase reversal?	1
k)	Differentiate between Analog and Digital signals.	1
l)	Define pinch-off voltage.	1
m)	Convert $(10101)_2$ into decimal number.	1
n)	Give two applications of Op-Amp	1

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

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

a)	Explain voltage divider bias method of transistor biasing.	**5**
b)	Explain in detail construction and working of JFET.	**5**
c)	Explain in detail OR Gate with its logic diagram and truth table.	**4**

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

a)	Enumerate on Base resistor method of transistor biasing.	**5**
b)	Write a note on UJT.	**5**
c)	Enlist the main differences between BJT and JFET.	**4**

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

a)	Explain in detail AND gate with two inputs logic diagram and its truth table.	**6**
b)	Explain two applications of Op-Amp.	**6**
c)	Give an account on Binary addition with examples.	**2**

Q-5		**Attempt all questions**	**(14)**
	a)	Give the technical characteristics of an Ideal Op-Amp with their values..	**5**
	b)	Explain in detail parameters of JFET.	**6**
	c)	Give the classifications of amplifier	**3**
Q-6		**Attempt all questions**	**(14)**
	a)	Explain in details Barkhausen's criterion for self-sustained oscillations.	**5**
	b)	Explain the practical circuit of transistor amplifier in detail	**5**
	c)	Explain the construction of MOSFET with diagram.	**4**
Q-7		**Attempt all questions**	**(14)**
	a)	Explain in detail NAND Gate as a universal gate.	**6**
	b)	Write a note on NOT Gate with its logic circuit diagram.	**5**
	c)	Give the function and working of a thermistor	**3**
Q-8		**Attempt all questions**	**(14)**
	a)	Explain in detail Half adder and Full adder circuits.	**5**
	b)	State and prove De Morgan's theorem.	**6**
	c)	Simplify the following Boolean expression: $Y = AB + ABC + AB\bar{C}$	**3**