Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2015

Subject Name: Electronic Devices and Circuits

Subject Code: 5SC01PHC4 **Branch: M.Sc. (Physics)**

Semester: 1 Date: 07/12/2015 Time: 10:30 To 1:30 Marks: 70

Instructions:

(1) Use of Programmable calculator and 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.

SECTION – I

Q-1 **Attempt the Following questions** **(07)**

a. Define reverse saturation current. **01**
b. Define maximum symmetrical swing. **02**
c. Draw symbol and V-I characteristic of Zener diode. **01**
d. Gives the types of transistor with its symbol. **01**
e. Define contact potential. **02**

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

a) Explain diode capacitance in details. **07**
b) Explain current flow mechanism in transistor. **04**
c) Explain reverse recovery time. **03**

OR

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

a) Write a short note on zener diode voltage regulator. **05**
b) Explain common emitter amplifier circuit analysis. **06**
c) Derive an expression for current gain. **03**

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

a) Explain in detail Ebers-moll transistor model **07**
b) What is contact potential? Explain contact potential diode current equations under forward and reverse bias conditions. **07**

OR

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

a) Explain common emitter configuration in details. **07**
b) Explain breakdown mechanism in P-N Junction diode. **07**

SECTION – II

Q-4		**Attempt the Following questions**	**(07)**
	a.	Define pinch off voltage of JFET.	**02**
	b.	What is the principle of solar cell?	**01**
	c.	What is the full form of SCR?	**01**
	d.	What is DIAC?	**01**
	e.	What is photo conductivity?	**02**
Q-5		**Attempt all questions**	**(14)**
	a)	Write a short note on tunnel diode.	**05**
	b)	Write a short note on Diac.	**05**
	c)	What are JFET parameters?Describe.	**04**
		OR	
Q-5		**Attempt all questions**	**(14)**
	a)	Explain construction, and characteristics of light emitting diode.	**05**
	b)	Explain construction and characteristics of Thermistor.	**05**
	c)	What is UJT? Draw its V-I Characteristics.	**04**
Q-6		**Attempt all questions**	**(14)**
	a)	Explain construction, Operation and characteristics of SCR.	**07**
	b)	Explain the working of a solar cell. Define its efficiency, Fill factor, short circuit current, and open circuit voltage.	**07**
		OR	
Q-6		**Attempt all Questions**	**(14)**
	a)	Explain in detail depletion type MOSFET with construction, Operation and its V-I Characteristics.	**07**
	b)	Write a technical note on TRIAC.	**07**