Exam Seat No:_____ Enrollment No:_____

C.U.SHAH UNIVERSITY

WADHWAN CITY

University (Winter) Examination -2013

Course Name :M.Sc(Physics) Sem-I **Subject Name: -Electronic Devices and Circuits** **Marks :70**

Duration :- 3:00 Hours **Date : 23/12/2013**

Instructions:-

(1) Attempt all Questions of both sections in same answer book / Supplementary.
(2) Use of Programmable calculator & any other electronic instrument is prohibited.
(3) Instructions written on main answer Book are strictly to be obeyed.
(4) Draw neat diagrams & figures (If necessary) at right places.
(5) Assume suitable & Perfect data if needed.

SECTION – I

Q-1 Do as Directed.(All Questions are compulsory)

a) What is reverse recovery time? Define with figure fig. (02)
b) Define maximum symmetrical swing. (02)
c) Draw the circuit diagram of emitter follower configuration (01)
d) What is reverse saturation current in a Diode? (01)
e) Give just name of application of zener diode. (01)

Q-2 Answer the following in detail.

a) What is Zener diode? Explain the operation of zener diode in forward biased and reverse biased condition. (05)
b) Explain current flow mechanism in a transistor. (05)
c) Define contact potential. How it arises? (04)

OR

Q-2 Answer the following in detail.

a) Discuss the forward and reverse bias characteristic of a P-N junction diode with its circuit diagram. (05)
b) Explain common Emitter amplifier circuit analysis. (05)
c) Derive diode current equation. (04)

Q-3 Answer the following in detail.

a) Explain transistor common Base configuration and sketch a circuit for determining common Base current voltage characteristics. (07)
b) Explain breakdown mechanism in PN junction diode. (07)

OR

Q-3 Answer the following in detail.

a) Explain Ebers-Moll Transistor Model. (07)
b) Explain diode capacitance. (07)

SECTION– II

Q-4 Do as Directed.(All Questions are compulsory)

a) Define pinch off voltage of JFET. (01)
b) Give Shockley's equation for JFET transfer characteristic. (01)
c) What is the full form of SCR? (01)
d) What is diac? (01)
e) Define Photovoltaic effect. (01)

f)	Draw the symbol N-channel Enhancement MOSFET.	(01)
g)	Define latch current of an SCR.	(01)

Q-5 Answer the following in detail.

a)	Explain construction and characteristic of depletion type MOSFET.	(05)
b)	Explain JFET common source amplifier in details.	(05)
c)	What is UJT ? Draw It's V-I characteristic of it.	(04)

OR

Q-5 Answer the following in detail.

a)	Write a short note on Light emitting diode.	(05)
b)	Write a short note on Triac.	(05)
c)	Discuss the current voltage characteristic of JFET.	(04)

Q-6 Answer the following in detail.

a)	Explain the working of a solar cell, Define its efficiency, fill factor, short circuit current and open circuit voltage.	(07)
b)	Explain the construction, operation and two transistor analogy theory for a SCR device.	(07)

OR

Q-6 Answer the following in detail.

a)	Explain in detail Enhancement type MOSFET with construction, operation and V-I characteristic.	(07)
b)	Write a short note on Thermistor and its application	(07)

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