

University Institute of Engineering & Technology
(Recognised Under Section 2(f) and 12B of UGC)
Kurukshetra University, Kurukshetra

Roll No. -

THEORY EXAMINATION – DEC 2018
B.TECH - ECE **SEMESTER – III**

TIME – 3 Hrs.

M.M. - 75

COURSE NO. - ECE-203

COURSE TITLE - Electronic Devices

Note: All questions in Part-A and Part-B are compulsory. Attempt any four questions from Part-C selecting at least one from each unit.

PART-A (15 Marks)

Q. No. – 1 Answer the following questions.

15x1=15

(i)	What is Diffusion Capacitance?
(ii)	What is meant by Q point?
(iii)	Write any two differences between BJT & FET.
(iv)	What is the disadvantage of negative feedback?
(v)	Define hybrid parameters.
(vi)	State mass action law.
(vii)	Define the term transconductance.
(viii)	Write any two applications of Hall effect.
(ix)	The regulator IC 7905 provides the voltage _____
(x)	Plot the transfer characteristics of MOSFET.
(xi)	The parameter h_{11} has the unit of _____ and h_{22} has of _____ .
(xii)	Draw the energy band diagram of MOS capacitor when gate is negative.
(xiii)	Draw the equivalent circuit of zener diode as a voltage regulator.
(xiv)	Plot the transfer characteristics of MOSFET in enhancement mode.
(xv)	Define Fermi energy level.

PART-B (20 Marks)

UNIT-I		5
2	Explain the characteristics and applications of Schottky diode.	5
UNIT-II		
3	Discuss the construction and applications of Hetrojunction Transistors.	5
UNIT-III		
4	Analyse the low and high frequency model of Field Effect Transistors.	5
UNIT-IV		
5	Distinguish between Linear Power Supply and SMPS.	5

PART-C (40 Marks)

UNIT-I		
6	Obtain the expressions of charge density, conductivity and resistivity on N and P type Semiconductors.	10
7	Derive the expression of built in potential barrier in PN junction diode at zero bias. Also explain the difference between Diffusion and Depletion capacitance in PN Junction	10
UNIT-II		
8	Derive the h parameter equations of current gain, input and output impedance of common Emitter transistor amplifier.	10
9	Explain the following: 1) High frequency limitations of BJT's 2) Ebers Moll Model	10
UNIT-III		
10	Explain the current voltage relationship of JFET. Also explain the parameters of FET's.	10
11	Explain the following terms: 1) Internal Pinch off voltage 2) Channel Length Modulation 3) I_{DSS} 4) Amplification factor	10
UNIT-IV		
12	A transistor series voltage regulator has the following specifications: $V_{in} = 10V$, $V_Z = 7V$, $R_{in} = 1.8K\Omega$, $R_L = 2K\Omega$ and $\beta = 100$ Calculate output voltage and zener current in the circuit.	10
13	Differentiate between series and shunt voltage regulators. Explain with the help of Diagrams.	10