Code No: 113AU **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year I Semester Examinations, April/May - 2018
ELECTRONIC DEVICES AND CIRCUITS
(Common to EEE, ECE, CSE, EIE, IT, MCT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a)	Define static resistance.	[2]
b)	Write the effect of temperature on diode characteristics.	[3]
c)	What is regulation?	[2]
d)	List the differences between different filters.	[3]
e)	Define current amplification factor.	[2]
f)	What is emitter follower? Draw the circuit diagram of CC configuration.	[3]
g)	What is the need of biasing?	[2]
h)	Explain, how to avoid thermal runway?	[3]
i)	Mention the applications of FET.	[2]
j)	Why the input impedance of FET is higher than BJT?	[3]

PART-B

(50 Marks)

2.a) Draw and explain V-I characteristics of PN diode.
b) With suitable expressions explain transition capacitance. [5+5]

OR

3.a) Describe the principle of operation of tunnel diode.
b) Explain the working of semiconductor photo diode. [5+5]

4.a) Derive the equation for ripple factor of half wave rectifier with C-filter.
b) With suitable wave forms explain bridge rectifier. [5+5]

OR

5.a) Describe the operation of full wave rectifier with π-section filter.
b) A 50 Hz transformer having 60 V r. m. s. on each side of the centre tap supplies a full wave rectifier circuit. The circuit load is 210 Ω with a shunt capacitor filter of 1000 μF. Find the ripple factor. [5+5]

6.a) Explain the working of PNP transistor.
b) Write the differences between CB, CE, and CC Amplifier Configurations. [5+5]

OR

7.a) Derive the relation between α and β.
b) Discuss, how the h-parameters are determined from transistor Characteristics. [4+6]

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8.a) Derive the equation for stability factor for fixed bias.

b) Draw and explain the circuit for bias compensation using diode. [5+5]

OR

9.a) Write a short note on Stabilization against variations in V_{BE} and β.

b) For the transistor amplifier circuit, when signal changes by 0.012 V, the base current changes by 9 μA and collector current by 1.3 mA. If the collector load R_C = 6 KΩ, R_L = 12 KΩ. Determine input resistance, current gain and voltage gain. [5+5]

10.a) Write short notes on Small Signal Model of JFET.

b) Draw and explain drain and transfer characteristics of depletion type MOSFET. [5+5]

OR

11.a) With neat sketch, discuss about common source FET amplifier.

b) Explain, how FET is working as Voltage Variable Resistor? [6+4]

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