Q.P. Code: **16EC401**

R16

Reg. No: ☐☐☐☐☐☐☐☐☐☐

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester (R16) Regular Examinations November 2017
BASIC ELECTRONIC DEVICES
(Common to ECE, EEE)

Time: **3 hours**   Max. Marks: **60**

(Answer all Five Units **5 X 12 = 60** Marks)

UNIT-I

1	a	Differentiate between ideal and practical diodes with examples	6M
	b	Write the ideal diode current–voltage relationship	6M

OR

2	With neat diagrams, explain forward and reverse biasing of a PN Junction diode Draw its V-I Characteristics	12M

UNIT-II

3	a	Draw and explain the basic structure of LED. Mention the applications of LED.	6M
	b	Write notes on Liquid Crystal Display	6M

OR

4	a	Draw the basic structure of an SCR. Explain its characteristics and list the applications.	6M
	b	Define Holding Current and Latching Current of SCR	6M

UNIT-III

5	a	Draw the circuit diagram of half wave rectifier and explain its operation with the help of waveforms	6M
	b	A bridge rectifier is supplied directly from a 220-V (rms), 50-Hz source without any input transformer. The load resistance is R_L =2kΩ. Assume that the second harmonicis the dominant one	6M

OR

6		AHWR is supplied directly from a 220-V (rms), 50-Hzsource without any input transformer. The load resistance is R_L =1kΩ. Assume that the second harmonicis the dominant one	
	a	Design a Capacitor filter so that the rms ripple voltage $V_{r(rms)}$ is limited to less than 5% of $V_{o(av)}$	6M
	b	With the value of C found in part (a), calculate the average output voltage $V_{o(av)}$, and the capacitor voltageif the load resistance R_L is disconnected	6M

UNIT-IV

7	a	Give the current components of PNP transistor and explain	6M
	b	If the base current in a transistor is 20µA when the emitter current is 4mA, what are the values of α and β? Also calculate the collector current	6M

OR

8	a	Discuss the operation and drain characteristics of n-channel depletion type MOSFET	6M
	b	Design a CEamplifier with A_V=100, I_C=3mA, $I_{C(min)}$=2.5mA; $I_{C(max)}$=3.5mA, R_L=4.7KΩ. The lower and upper cut-off frequency is 500Hz. The parameters of BC107 transistor are $h_{fe(min)}$=180; $h_{fe(max)}$=400.	6M

UNIT-V

9	Derive the relation between $S(I_{co})$ and $S(\beta)$ of a Self-bias circuit	12M

OR

10	a	Describe Thermistor and Sensistor Compensation Techniques	6M
	b	Discuss about Thermal Runaway and Thermal Resistance.	6M

*** END ***