Q.P. Code: 19EC0402 **R19**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations August-2021

ELECTRONIC DEVICES AND CIRCUITS

(Common to EEE & ECE)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	**a**	The reverse saturation current of a silicon PN junction diode is 10μA. Solve the diode current for the forward bias voltage of 0.6V at 250C.	**5M**
	b	Demonstrate the effect of temperature on V-I characteristics of PN junction diode.	**7M**

OR

2	**a**	Explain Positive and Negative Diode Clippers with neat waveforms.	**6M**
	b	What is a Clamper circuit? Describe about positive and negative clampers with neat circuit diagrams.	**6M**

UNIT-II

3	**a**	Draw the circuit diagram of a Half wave rectifier and explain its operation with the help of waveforms.	**5M**
	b	Determine the expressions for Average DC current, Average DC Voltage, RMS Value of Current, DC Power Output and AC Power input of a Half Wave Rectifier.	**7M**

OR

4	**a**	Demonstrate the working and characteristics of UJT with neat diagram.	**6M**
	b	Explain with diagram the construction, working and applications of Solar Cell.	**6M**

UNIT-III

5	**a**	Illustrate the Input and Output characteristics of BJT in CC Configuration. Also obtain the expression for Output collector current equation for a Transistor in CC configuration.	**6M**
	b	With a neat diagram, Explain how a transistor acts as an amplifier?	**6M**

OR

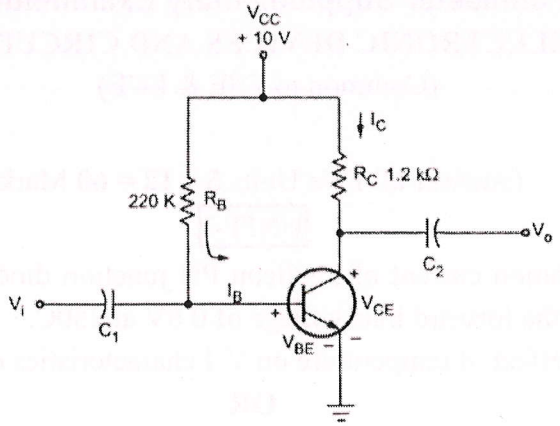
6		Explain the construction and working principle of N-channel JFET.	**12M**

UNIT-IV

7	**a**	Explain Sensistor Compensation Technique.	**5M**
	b	Estimate the condition for achieving Thermal Stability.	**7M**

OR

8 **a** For the circuit shown in the Figure, solve IB, IC, VCE, VB , VC and VBC. Assume that VBE = 0 and β = 50. **6M**



b Interpret Diode Compensation Techniques for the parameters VBE and ICO. **6M**

UNIT-V

9 Using low frequency h-parameter model, Deduct the expressions for voltage gain, current gain, input impedance and output admittance for a BJT Amplifier in CE configuration. **12M**

OR

10 **a** Determine the parameters Ai, Ri, Av and R0 of Common Collector Amplifier using simplified hybrid model analysis. **6M**

b A voltage source of internal resistance, Rs = 900Ω drives a CC amplifier using load resistance RL=2000Ω. The CE h parameters are hfe=60, hie=1200Ω, hoe = 25μA/V and hre = 2 x 10-4. Solve AI, Ri, Av and R0 using approximate analysis. **6M**

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