Register Number:……..

KUMARAGURU
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B.E. DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Third Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

U18EEI3203**:** Analog Electronics and Linear Integrated Circuits

COURSE OUTCOMES

CO1: Understand the characteristics and applications of various semiconductor devices

CO2: Gain knowledge about small signal analysis of BJT and FET amplifiers

CO3: Analyze large signal amplifier and oscillator circuits.

CO4: Design and analyze the linear applications of Op-amp and Familiarize with the concept of IC based voltage regulator and signal conversion circuits.

CO5: Apply the knowledge of semiconductor devices to design analog circuits for various applications using simulation software tools and hardware

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

1.	Write the nature of transition region width across a PN junction diode in forward and reverse bias condition.	CO1	[K_1]
2.	List the various configuration techniques of BJTs.	CO1	[K_1]
3.	Enlist the conditions required for faithful amplification.	CO2	[K_2]
4.	Justify the need of R_E in emitter bias circuit.	CO2	[K_2]
5.	Define Stability factor and write its equation.	CO2	[K_1]
6.	State the advantages of Negative Feedback.	CO3	[K_2]
7.	Classify the types of amplifiers.	CO3	[K_2]
8.	What are the components of a PLL	CO4	[K_1]
9.	List the features of LM317.	CO4	[K_2]
10.	List any two software tools used to design Analog Circuits.	CO5	[K_2]

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

11.	a)	With neat sketch, explain the operation and VI characteristics of PN Junction Diode.	12	CO1	[K_2]
	b)	List the differences between BJT and MOSFET.	4	CO1	[K_2]
12.	a)	Consider two NPN transistors Q1 and Q2 with individual current gain β1 & β2, connected as Darlington pair. Prove that the overall gain of the circuit is higher.	8	CO2	[K_2]
	b)	Explain the behavior of CE Amplifier connected with bypass and coupling capacitors. Also deduce its frequency response characteristics.	8	CO2	[K_2]
13.	a)	Explain with neat circuit diagram Class AB amplifiers.	8	CO3	[K_2]
	b)	State Barkhausen Criteria for Oscillations. Explain with necessary diagrams the RC Phase shift oscillator.	8	CO3	[K_2]
14.	a)	Explain in detail, the functional block diagram of a 555 Timer.	8	CO4	[K_2]
	b)	Explain the operation of VCO with help of functional block diagram. Also show the pin-diagram of IC 566.	8	CO4	[K_2]
15.	a)	Draw a neat circuit of an integrator circuit. Explain the functioning with the input-output waveforms.	8	CO4	[K_2]
	b)	The gain of an inverting amplifier is -10 and the input resistance is 50kΩ. Find the values of Ri and Rf and draw the designed circuit diagram.	8	CO4	[K_3]
16.		Explain with a neat circuit diagram and relevant waveforms the working of a Full wave rectifier and derive the expression for DC output voltage and RMS value of output voltage.	16	CO1	[K_2]

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