Course Code: 2030402 **Roll No:** **MLRS- R20**

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

II B.Tech I Sem Regular End Examination, February-2022

Analog Electronics

(EEE)

Max. Marks: 70

Note: 1. Question paper consists: Part-A and Part-B.
2. In Part – A, answer all questions which carries 20 marks.
3. In Part – B, answer any one question from each unit.
Each question carries 10 marks and may have a, b as sub questions.

PART- A

(10*2 Marks = 20 Marks)

1.	a)	What are the conditions for the approximate h-parameter model?	2M	CO1	BL1
	b)	Difference between half-wave rectifier and full-wave rectifier	2M	CO1	BL2
	c)	Draw the characteristics of N-channel enhancement MOSFET	2M	CO2	BL1
	d)	Draw the high frequency equivalent circuit of MOSFET	2M	CO2	BL1
	e)	Discuss about Class-A power amplifier	2M	CO3	BL2
	f)	What are the drawbacks of transformer coupled power amplifiers	2M	CO3	BL1
	g)	What is the effect of –ve feedback on the input impedance of an amplifier	2M	CO4	BL1
	h)	State Barkhausen's criteria	2M	CO4	BL1
	i)	What are ideal characteristics of operational amplifier	2M	CO5	BL1
	j)	Define Slew rate.	2M	CO5	BL1

PART- B

(10*5 Marks = 50 Marks)

2	a)	With circuit and necessary waveforms explain the operation of full-wave rectifier.	5M	CO1	BL4
	b)	Illustrate the working principle of pn junction diode in forward bias.	5M	CO1	BL3
		OR			
3		Draw the circuit of fixed bias CE amplifier. In a silicon transistor with a fixed bias, Vcc= 9 V, Rc= 3 kΩ, R_B= 8kΩ, β = 50, V_{BE}= 0.7V. Find the operating point.	10M	CO1	BL3
4	a)	Explain the construction and working of n-type Enhancement MOSFET	5M	CO2	BL4
	b)	Distinguish between common-source, common-gate and common-drain amplifiers of MOSFET.	5M	CO2	BL2
		OR			
5		Explain how MOSFET acts as a switch. Compare n-type and p-type MOSFET.	10M	CO2	BL4

6	a)	Classify power amplifiers based on operating point selection with neat diagram.	5M	CO3	BL2
	b)	Draw the circuit diagram of complementary symmetry class-B push pull amplifier and explain its operation.	5M	CO3	BL4
		OR			
7		Draw the circuit diagram of a cascade amplifier and derive its overall voltage gain and impedance from its equivalent circuit	10M	CO3	BL6
8	a)	Calculate the voltage gain, input impedance and output impedance of a voltage series feedback amplifier having an open loop gain A=300, Ri =1.5KΩ, R0=50KΩ and β=1/20.	5M	CO4	BL3
	b)	Discuss the effect of negative feedback with respect to closed loop gain, bandwidth.	5M	CO4	BL2
		OR			
9		Perform the generalized analysis of LC oscillators with suitable block diagram and obtain the condition for Hartley and colpitt's oscillators	10M	CO4	BL4
10	a)	Explain how an op-amp can be used as integrator? Also derive expression for the output.	5M	CO5	BL4
	b)	Calculate output voltage of a non-inverting amplifier for values of $V_1 = 2V$, $R_f = 500K\Omega$ and $R_1 = 100K\Omega$.	5M	CO5	BL3
		OR			
11		Draw the block schematic of an op-amp and explain the functions of each block	10M	CO5	BL4

---oo0oo---