II B.Tech - II Semester – Regular / Supplementary Examinations
MAY - 2023

ANALOG CIRCUITS
(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries
14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level   CO – Course Outcome

			BL	CO	Max. Marks
		UNIT-I			
1	a)	Give the block diagram of a general feedback amplifier. State the functions of each block.	L2	CO1	7 M
	b)	Draw equivalent circuit of voltage shunt feedback amplifier and derive Trans-resistance, input resistance and output resistance.	L4	CO4	7 M
		OR			
2	a)	Explain current shunt feedback amplifier with block diagram. Draw its equivalent circuit and derive trans-conductance, input resistance and output resistance.	L4	CO2	9 M
	b)	A Voltage series negative feedback amplifier has voltage gain without feedback of A=500, input resistance R_i = 3KΩ, output	L3	CO2	5 M

		resistance R_0=20KΩ and feedback ratio β=0.01. Calculate voltage gain A_f, input resistance R_{if} and output resistance R_{of} of the amplifier with feedback.			

UNIT-II

3	a)	Explain the operation of inverting and non-inverting amplifier.	L2	CO1	8 M
	b)	The two input terminals of an op-amp are connected to voltage signals 745 µV and 740 µV respectively. The gain of the op-amp in differential mode is 5×10^5 and CMRR is 80dB. Calculate the output voltage and % error due to common mode.	L3	CO3	6 M

OR

4	a)	Draw the adder, subtractor circuits using op-amp and discuss the operation.	L2	CO1	8 M
	b)	Illustrate the operation of an ideal differentiator.	L3	CO3	6 M

UNIT-III

5	a)	Explain working of RC phase shift oscillator with neat diagram.	L2	CO1	7 M
	b)	Derive Oscillator frequency and feedback factor of colpitts Oscillator.	L4	CO4	7 M

OR

6	a)	Explain working of class A amplifier with neat diagram.	L3	CO2	7 M

	b)	Derive oscillator frequency f_o and feedback factor β of wien bridge oscillator with neat diagram.	L4	CO4	7 M

UNIT-IV

7	a)	Draw circuit diagram of an astable multi-vibrator using IC 555 timer and explain its working.	L3	CO3	7 M
	b)	Draw and explain operation of high pass filter.	L2	CO1	7 M

OR

8	a)	Draw IC 555 timer pin diagram and explain each pin.	L2	CO1	7 M
	b)	Draw and explain operation of low pass filter.	L3	CO3	7 M

UNIT-V

9	a)	Explain the working of binary weighted resistor type D/A converter.	L3	CO3	7 M
	b)	Explain about flash (parallel comparator) type A/D converter.	L3	CO3	7 M

OR

10	a)	Explain the working of R-2R ladder type D/A converter.	L3	CO3	7 M
	b)	Explain counter type A/D converter.	L2	CO1	7 M