

Model Question Paper-1/2 with effect from 2022-23 (CBCS Scheme)

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Fourth Semester B.E. Degree Examination

LINEAR INTEGRATED CIRCUITS

TIME: 03 Hours

Max. Marks: 100

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module -1			Level	CO	Marks
Q.01	a	Define the following parameters: i)CMRR ii)PSRR iii)slew rate iv)input bias current v)input offset voltages	L1	CO1	10
	b	Explain the basic operational amplifier circuit.	L1	C02	10
OR					
Q.02	a	With a neat circuit diagram, explain the working of direct coupled non inverting amplifier.	L1	C02	08
	b	Design an inverting amplifier using a 741 op-amp. The voltage gain is to be 50 & output voltage amplitude is to be 2.5V.	L1	C03	06
	c	Explain the working of difference amplifier using op-amp.	L1	C02	06
Module-2					
Q. 03	a	With a neat circuit diagram explain the working of High Zin capacitor coupled voltage follower.	L2	C02	08
	b	Design a capacitor coupled inverting amplifier using op-amp 741 to have a voltage gain of 50 & an output voltage of 2.5V. The input signal frequency ranges from 10Hz to 1Khz with a load resistance of 250Ω.	L2	C03	06
	c	Explain the high Zin capacitor coupled non inverting amplifier with necessary design steps.	L2	C02	06
OR					
Q.04	a	Draw the circuit diagram of instrumentation amplifier and explain its operation with necessary equations.	L2	C01	07
	b	Sketch the precision full wave rectifier using HWR & summing circuit and explain it.	L2	C02	07
	c	Explain how the upper cutoff frequency can be set for inverting & noninverting amplifier.	L2	C02	06
Module-3					
Q. 05	a	Sketch & explain the working of phase shift oscillator using op-amp and also write the design equations.	L3	C02	08
	b	Explain inverting Schmitt trigger circuit with necessary waveforms and equations.	L3	C02	06
	c	Draw and explain an op-amp sample & hold circuit with necessary waveforms.	L3	C03	06
OR					
Q. 06	a	Sketch & explain the operation of Wein bridge oscillator.	L3	C02	07
	b	Explain the working of logarithmic amplifier using op-amp.	L3	C02	06
	c	With a neat circuit diagram, explain multiplier using op-amp and mention its applications.	L3	C01	07
Module-4					
Q. 07	a	Sketch the circuit & frequency response of a first order low pass filter circuit & explain its operation.	L4	C02	07
	b	Sketch the circuit of second order active high pas filter using op-amp and explain its working.	L4	C01	07
	c	Design a second order low pass filter using 741 op-amp for a cut frequency of 1kHz.	L4	C03	06

OR					
Q. 08	a	Draw the functional block diagram of a 723 regulator & explain it.	L4	C01	08
	b	Explain in detail series op-amp regulator.	L4	C02	08
	c	List the characteristics of three terminal IC voltage regulator.	L4	C01	06
Module-5					
Q. 09	a	Explain the working of phase locked loop (PLL) with a neat block diagram.	L5	C02	08
	b	Explain the working of successive approximation type ADC.	L5	C02	07
	c	Explain the working of 3bit DAC using R-2R ladder network.	L5	C02	07
OR					
Q. 10	a	A 555 Astable multivibrator has $R_A=2.2K\Omega$, $R_B=6.8K$, & $C=0.01$. Calculate i) t_{High} ii) t_{Low} iii)Free running frequency iv) Duty cycle	L5	C03	05
	b	With a neat functional block diagram & waveforms, explain the working of Astable multivibrator using 555 timer.	L5	C02	10
	c	What output voltage would be produced by a D/A converter whose output voltage is 0 to 10 V & whose input binary number is i)10(for a 2bit DAC) ii)0110(for a bit DAC) iii)10111100(for a 8-bit DAC)	L5	C03	05