Total number of printed pages: 2 **D/4th/DIE401**

2023

ELECTRONICS DEVICES AND CIRCUITS-II

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1.	a)	Explain feedback amplifier with the help of a block diagram.	6
	b)	Draw the block diagram of a negative feedback amplifier. Derive an expression for the voltage gain of an amplifier of gain A when subjected to negative feedback with feedback fraction β.	6
	c)	Discuss the effect of negative feedback on amplifier characteristics.	5
	d)	Voltage gain of an amplifier without feedback is 80 db. It decreases to 30 db with feedback. Calculate the feedback factor.	3
2.	a)	State the conditions under which a feedback amplifier works as an oscillator.	2
	b)	Descrie the principle of operation of LC Tank circuit.	4
	c)	Describe Hartley oscillator circuit and explain its action.	6
	d)	What is the basic principle of operation of RC oscillator?	4
	e)	A tuned collector oscillator in radio receiver has a fixed inductor of 70 μH and has to be tunable over the frequency band 400 kHz to 1200 kHz. Find the range of variable capacitor to be used.	4
3.	a)	Classify amplifiers on the basis of frequency.	3
	b)	What is tuned amplifier? Why tuned amplifiers cannot be used for audio frequency amplification?	1+2=3
	c)	Explain tuned amplifier with capacitive coupling.	7

	d)	Explain double tuned amplifier with a suitable circuit diagram.	7
4.	a)	Define the following terms: (i) CMRR (ii) Input offset voltage (iii) PSRR (iv) Slew rate (v) Input bias current	5
	b)	Give Ideal Op-amp characteristics.	4
	c)	Draw the pin diagram of IC741	2
	d)	Explain the block diagram of Op-amp.	4
	e)	Write the limitations for Open loop Op-amp.	2
	f)	Explain voltage follower.	3
5.	a)	Derive the expression for gain of an inverting amplifier.	7
	b)	An inverting amplifier circuit has input series resistor of 20 kΩ, feedback resistor of 100 kΩ and a load resistor of 50 kΩ. Draw the circuit and calculate the input current, load current, and the output voltage when the applied input voltage is equal to +1.6 V	7
	c)	Why an astable multivibrator is called a free running multivibrator? Explain.	6
6.		Write short notes on following (any four)	4x5=20
	i)	Differentiator	
	ii)	Non Inverting Op-amp	
	iii)	Stagger tuned amplifier	
	iv)	Phase shift oscillator	
	v)	Crystal oscillator	