Reg. No.															

Question Paper Code	12890

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Third Semester

Electronics and Instrumentation Engineering

(Common to Instrumentation and Control Engineering)

20EIPC303 - ANALOG ELECTRONIC CIRCUITS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Find the value of β if a transistor has α = 0.97.Also find α if β=100.	2	K2	CO1
2.	Define an intrinsic standoff ratio of a UJT and draw its equivalent circuit.	2	K1	CO1
3.	List the differences between Class-A and Class-B power amplifiers.	2	K1	CO2
4.	Sketch the small signal equivalent circuit for CG amplifier.	2	K2	CO2
5.	Write the barkhausen criteria as applicable to oscillator circuits.	2	K1	CO3
6.	Hartley oscillator circuit has C=500 pf, L1=20 mH and L2= 5 mH, find its frequency of oscillation.	2	K2	CO3
7.	Draw and write the output voltage equation of Non-inverting amplifier.	2	K2	CO4
8.	What do you mean by input offset current and offset voltage?	2	K1	CO4
9.	Point out any two application of 555 Timer in Mono stable mode.	2	K2	CO5
10.	What are the different types of Linear Voltage regulators?	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Derive the expression for PN junction diode forward and reverse currents with suitable diagram and necessary explanation.	13	K2	CO1
		OR			
	b)	Derive input impedance, output impedance, voltage gain and current gain of Common Emitter amplifier using the small signal analysis.	13	K2	CO1
12.	a) i)	Design a class B power amplifiers to deliver 25w to a load resistor RL=8 ohms, using transformer coupling. Vm=Vcc=25V. Assume necessary data.	7	K2	CO2
	ii)	Derive the equation for maximum efficiency of a class A transformer coupled amplifier.	6	K2	CO2
		OR			
	b)	Derive input impedance, output impedance and voltage gain of JFET Common Drain amplifier with neat diagram.	13	K2	CO2

13. a) List the effects of negative feedback on stability, distortion, noise, input and output impedance of feedback amplifier. *13 K2 CO3*

OR

b) With a neat diagram explain about Hartley oscillator & derive the expression for frequency of oscillation and condition of oscillation. *13 K2 CO3*

14. a) Explain the operation of Op-Amp integrator and differentiator circuits. *13 K2 CO4*

OR

b) What are the features of instrumentation amplifier? Derive the expression for output voltage of an instrumentation amplifier. *13 K2 CO4*

15. a) With the help of internal circuit diagram of IC555 explain the operation of a monostable multivibrator. *13 K2 CO5*

OR

b) Write short notes on *13 K2 CO5*
(i) LM 317 Voltage Regulator.
(ii) IC 8038 Function Generator IC.

PART - C (1 × 15 = 15 Marks)

16. a) With a neat circuit diagram, describe the working of a Wien bridge oscillator. Derive an expression for the resonant frequency. Give its advantages and disadvantages. *15 K5 CO3*

OR

b) Identify the nature of the feedback in figure- 1. Let Rc_1=3kΩ, Rc_2=500Ω, R_E = 50Ω, R_S = R_F = 1.2 kΩ, hfe = 50, hie= 1.1 kΩ, hre = hoe = 0. Determine overall voltage gain (Avf), overall current gain (Aif), input impedance (Rif) and output impedance (Rof). *15 K5 CO3*