Reg. No.																

Question Paper Code	14676

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2026

Third Semester

Electrical and Electronics Engineering

24EEPC303 - ANALOG ELECTRONICS

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART – A (i) (MCQ)
(16 × 1 = 16 Marks)
Answer ALL Questions

		Marks	K – Level	CO
1.	The operating point (Q-point) of a BJT is defined as a) AC load line b) DC bias point c) Saturation point d) Cut-off point	1	K1	CO1
2.	Show how does a CDamplifier have high input impedance? a) Due to source resistance b) Due to gate insulation c) Due to drain current d) Due to load resistance	1	K2	CO1
3.	If both inputs are equal in a differential amplifier output will be a) Maximum b) Minimum c) Zero d) Infinite	1	K3	CO1
4.	Negative feedback reduces a) Bandwidth b) Distortion c) Gain stability d) Input impedance	1	K1	CO2
5.	Class AB reduces cross-over distortion because a) It increases gain b) Transistors conduct slightly c) It reduces voltage d) It removes load	1	K2	CO2
6.	Select a circuit in which one transistor conducts positive and negative half cycle. a) Class A b) Push-pull amplifier c) Oscillator d) Rectifier	1	K3	CO2
7.	The Barkhausen criterion for sustained oscillations requires a) Loop gain < 1 b) phase shift = 0° or 360° c) Phase shift = 180° d) Loop gain =0	1	K1	CO3
8.	The frequency of Hartley oscillator depends on a) Inductance b) Capacitance c) Resistance d) Both inductance and capacitance	1	K2	CO3
9.	In Clapp oscillator, an additional component added is a) Resistor b) Capacitor in series with inductor c) Inductor d) Transformer	1	K3	CO3
10.	CMRR stands for a) Common Mode Resistance Ratio b) Common Mode Rejection Ratio c) Current Mode Rejection Ratio d) Capacitive Mode Rejection Ratio	1	K1	CO4
11.	Gain of inverting amplifier is summarized as a) Positive b) Zero c) Negative d) Infinite	1	K2	CO4

12.	In a V/I converter, output current depends on		*1*	*K3*	*CO4*
	a) Load resistance only	b) Input voltage			
	c) Supply voltage	d) Temperature			
13.	Illustrate the main purpose of an instrumentation amplifier is to		*1*	*K2*	*CO5*
	a) Increase power	b) Amplify small differential signals			
	c) Generate oscillations	d) Convert analog to digital			
14.	Select the factor on which the Conversion time of ADCrely on		*1*	*K3*	*CO5*
	a) Input voltage	b) Number of bits			
	c) Temperature	d) Supply voltage			
15.	The IC 555 timer is mainly used for		*1*	*K1*	*CO6*
	a) Amplification	b) Timing applications			
	c) Power generation	d) Signal attenuation			
16.	Identify what happens while decreasing capacitor value on the output waveform of an astable multivibrator,		*1*	*K3*	*CO6*
	a) Increase frequency	b) Decrease frequency			
	c) No change	d) Stop oscillation			

PART – A (ii) (Short Answer Questions)
(6 × 3 = 18 Marks)
Answer ALL Questions

17.	Apply the impact of temperature on the drain current of a MOSFET.	*3*	*K3*	*CO1*
18.	Analyze the advantages and performance of a Class-C amplifier.	*3*	*K4*	*CO2*
19.	An amplifier has a current gain of 240 and input impedance of 15KΩ without feedback. If negative current feedback (current attenuation = 0.015) is applied, what will be the input impedance of the amplifier?	*3*	*K3*	*CO3*
20.	Evaluate an application of an inverting amplifier.	*3*	*K4*	*CO4*
21.	Model the different types of direct ADCs based on their operation.	*3*	*K3*	*CO5*
22.	Examine the functional block diagram of 723 regulator.	*3*	*K4*	*CO6*

PART - B (Descriptive Answer Questions)
(6 × 11 = 66 Marks)
Answer ALL Questions

23.	a)	Construct a neat diagram and apply the concept of source and drain resistance biasing of MOSFET.	*11*	*K3*	*CO1*
		OR			
	b)	Build the circuit diagram of a differential amplifier using BJT and solve the CMRR through small signal analysis.	*11*	*K3*	*CO1*
24.	a)	Analyze the working of a transformer-coupled Class-A power amplifier with diagrams and derive the expression for efficiency.	*11*	*K4*	*CO2*
		OR			
	b)	Examine the operation of a Class-AB amplifier in avoiding crossover distortion with a neat diagram.	*11*	*K4*	*CO2*

25.	a)	Apply the concept of Hartley oscillator in its construction and working with neat diagram.	*11*	*K3*	*CO3*
		OR			
	b)	Apply the concept of crystal oscillator in its construction and working with neat diagram.	*11*	*K3*	*CO3*
26.	a)	Analyze the DC characteristics of an op-amp.	*11*	*K4*	*CO4*
		OR			
	b)	Examine the circuit and analyze the operation of a current-to-voltage converter.	*11*	*K4*	*CO4*
27.	a)	Develop sample and hold circuit and explain its operation.	*11*	*K3*	*CO5*
		OR			
	b)	Utilize the Flash type A/D converter circuit to explain its function.	*11*	*K3*	*CO5*
28.	a)	Derive, to draw the waveform of a 1 kHz square wave generator using 555 timer for duty cycle of 50%.	*11*	*K3*	*CO6*
		OR			
	b)	Explain the operation of LM78XX fixed voltage regulator with necessary diagram.	*11*	*K3*	*CO6*