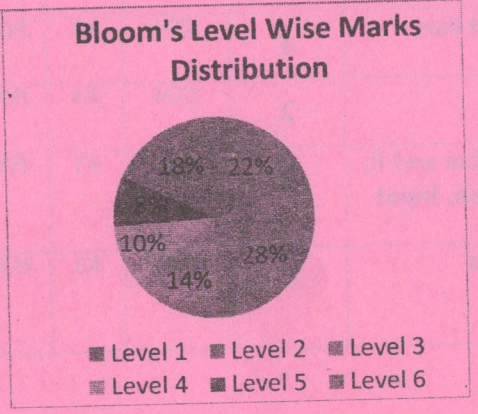
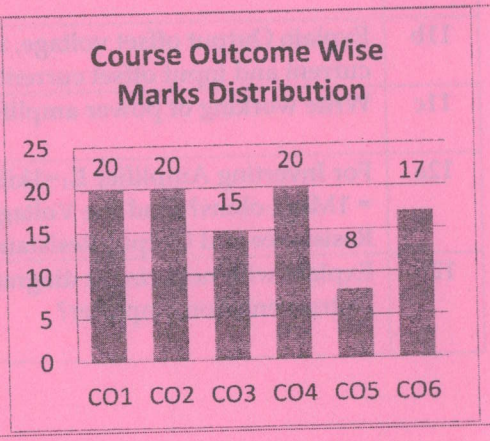
O- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Recall the characteristics of transistors.
	CO2	Understand the functioning of OP-AMP and design OP-AMP based circuits.
	CO3	Develop design competence in the area of discrete feedback amplifiers.
	CO4	Analyze various rectifier and amplifier circuits.
	CO5	Judge commonly used linear and non-linear applications of OP-AMP and Comparators.
	C06	Design competence in linear and non-linear OP-AMP Circuits

GRAFICAL REPRESENTATION





ARKAJAIN University Jharkhand

END TERM EXAMINATION
School of Engineering & IT

Branch	CSE & EEE	Program	B.Tech
Subject Name	Analog Electronics Circuits	Semester	3rd
		Year	2023/ Odd

Time: 3 Hour
Max. Marks : 70

- Start writing from 2nd page onwards; don't Write on the 1st Page Backside
- Answer all Questions of Section A (Compulsory)
- Answer Any Four out of Six of Section B
- Answer Any Three out of Five of Section C
- Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers.

Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to Q1-x) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Define avalanche breakdown in Zener Doide?	2	CO1	K1	PO2
ii	Interpret for positive bias Series Clippers and Negative bias Series Clippers?	2	CO1	K1	PO1
iii	Calculate I_C I_E and I_B for transistor whose α_{dc}=0.9 and I_B=50μA.	2	CO2	K4	PO3
iv	Compute Condition to be fulfilled to achieve faith Amplification in a Transistor Amplifier?	2	CO2	K2	PO2
v	Write short Notes on n-MOSFET?	2	CO3	K3	PO4
vi	Explain working of trans conductance small signal MOSFET?	2	CO3	K6	PO3
vii	Give the importance of direct coupled multi-stage amplifier	2	CO3	K2	PO5
viii	What do you understand by Slew rate?	2	CO4	K2	PO3
ix	What do you understand by Differential Apmlifier?	2	CO5	K6	PO3
x	Differentiate inverting and Non-inverting Amplifier?	2	CO6	K4	PO2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2a	Explain operation of Circuit of Half wave bridge Rectifier?	3	CO1	K2	PO2
2b	Prove that the ripple factor of a half-wave rectifier is 1.21 and that of a full-wave rectifier is 0.482.	2	CO1	K4	PO2
3a	Describe the working of clipper circuit with its application?	2	CO2	K1	PO1
3b	Write Condition to be fulfilled to achieve faith Amplification in a Transistor Amplifier?	3	CO2	K3	PO3
4a	Explain with neat sketch about analysis of CE configuration of BJT?	3	CO3	K4	PO4
4b	For transistor α_{dc}=0.89 and I_B= 100 µA calculate I_C?	2	CO3	K6	PO5
5a	Discuss V-I Characteristics of MOSFET	3	CO4	K5	PO2
5b	Write working of p- MOSFET?	2	CO4	K4	PO5
6a	What the negative feedback in Op-amp Circuit? Explain Closed loop Configuration.	3	CO4	K6	PO3
6b	A 100 PF capacitor has a maximum charging current of 150 µA. What is the slew rate?	2	CO4	K4	PO4
7a	Discuss of working an op-amp Integrator with circuit diagram?	3	CO5	K6	PO3
7b	Find the op-amp gain of a non-inverting operational amplifier?	2	CO6	K2	PO5

Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks

Q. No.	QUESTIONS	Marks	COs	KL	PO
8a	What is P-N Junction Diode? Explain its V-I Characteristics	4	CO1	K2	PO2
8b	Explain why a bridge rectifier is preferred over centre-tap rectifier?	6	CO1	K3	PO2
9a	Show that a silicon transistor with β=100 is biased by fixed bias method? Draw the d.c. load line and determine operating point. What is stability factor?	4	CO2	K1	PO2
9b	Draw a Circuit for CE Configuration of BJT at high frequency using Hybrid-Pi model and calculate base spreading resistance & Trans conductance,	6	CO2	K3	PO3
10a	Discuss Small signal analysis of Common source MOSFET amplifier and calculate gain, input and output impedance?	6	CO3	K2	PO2
10b	Explain construction and working of MOSFET?	4	CO3	K3	PO4
11a.	An operational amplifier has a slew rate of 2 V / µs. If the peak output is 12 V, what is the power bandwidth?	4	CO4	K2	PO2
11b	Explain Output offset voltage, input bias current and input offset current?	4	CO4	K3	PO4
11c	Write working of power amplifier?	2	CO4	K4	PO4
12a	For Inverting Amplifier R_1=1killo ohm and R_f = 1Mega ohms? Find the Voltage gain, input Resistance and Output Resistance?	5	CO5	K1	PO1
12b	Explain with neat circuit diagram an Instrumentation amplifier?	5	CO6	K3	PO1