



**BUDDHA INSTITUTE OF TECHNOLOGY, GIDA,  
GORAKHPUR**  
**DEPARTMENT OF ELECTRONICS & COMMUNICATION  
ENGINEERING**  
**PRE-AKTU EXAM (EVEN SEMESTER 2022-23)**  
**JULY-2023**

Course: B. Tech Semester: 4  
Subject: Analog Circuit Subject Code: KEC-402  
M.M. 100 Time: 3:00 Hrs Roll No. \_\_\_\_\_

**SECTION-A**

1. Attempt ALL questions. Each questions carry equal marks.

Marks: 10\*2=20

Q. No.	Question	Level of Taxonomy	Course Outcome
a.	Draw Low frequency Hybrid $\pi$ Model of BJT.	L2	1
b.	Explain Stability Factor in BJT Biasing.	L2	1
c.	Define efficiency of a Power Amplifier	L2	1
d.	Explain the merits of negative feedback.	L2	2
e.	Explain 'Barkhausen criterion' for oscillation.	L2	3
f.	Define Astable and Monostable Multivibrator.	L2	3
g.	Write the properties of differential Amplifier.	L2	4
h.	What do you mean by CMRR?	L2	4
i.	Explain the concept of virtual ground in operational amplifier.	L2	5
j.	List the properties of an ideal operational amplifier.	L2	5

**SECTION-B**

2. Attempt ALL questions. Each questions carry equal marks.

Marks: 3\*10= 30

Q. No.	Question	Level of Taxonomy	Course Outcome
a.	Drive the expressions for input impedance, output impedance, open circuit voltage gain, overall voltage gain and short circuit current gain after completing the AC analysis of common emitter amplifier with emitter resistance.	L3	1
<b>OR</b>			
a.	Explain Frequency Response of CS Amplifier.	L2	1
b.	What are the four Basic feedback Topologies? Explain them.	L2	2
<b>OR</b>			
b.	Obtain expression for the gain, input resistance and output resistance of series-shunt feedback amplifier.	L3	2
c.	Draw the circuit of Phase-Shift oscillator and find the expression for its frequency of oscillation	L3	3
<b>OR</b>			
c.	Draw the circuit of Wien- bridge oscillator and find the expression for its frequency of oscillation.	L3	3

**SECTION-C**

**3. Attempt ANY ONE questions. Each questions carry equal marks.**

**Marks: 1\*10=10**

Q. No.	Question	Level of Taxonomy	Course Outcome
a.	Explain the working of Class-A Amplifier and obtain its maximum efficiency.	L2	1
b.	Explain the working of Class-B Push-pull Amplifier. What is cross over distortion?	L2	1

**4. Attempt ANY ONE questions. Each questions carry equal marks.**

**Marks: 1\*10=10**

Q. No.	Question	Level of Taxonomy	Course Outcome
a.	Explain the operation of astable multivibrator with circuit and output waveforms.	L3	3
b.	Derive the expression for frequency of oscillation and condition for gain to get sustained oscillations for Colpitts oscillator.	L3	3

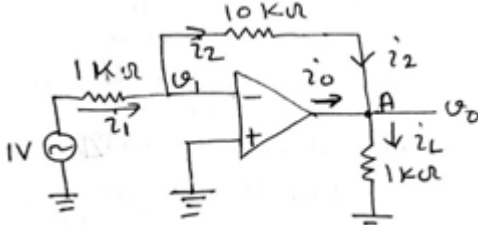
**5. Attempt ANY ONE questions. Each questions carry equal marks.**

**Marks: 1\*10=10**

Q. No.	Question	Level of Taxonomy	Course Outcome
a.	Draw the circuit of difference amplifier and obtained expression for differential gain, common mode gain and CMRR.	L3	4
b.	Explain the working of MOS differential Pair. Also write the input differential and common mode range.	L2	4

**6. Attempt ANY ONE questions. Each questions carry equal marks.**

**Marks: 1\*10=10**

Q. No.	Question	Level of Taxonomy	Course Outcome
a.	<b>Explain the working of Full-wave Precision Rectifier with proper circuit and output waveform.</b>	L2	4
b.	In the following circuit, determine $i_1$ , $i_2$ , $i_o$ , $i_L$ , $V_1$ and $V_o$ . Also determine current gain, voltage gain and power gain. 	L3	4

**7. Attempt ANY ONE questions. Each questions carry equal marks.**

**Marks: 1\*10=10**

Q. No.	Question	Level of Taxonomy	Course Outcome
a.	Obtain expression for transfer function and cutoff frequency of an active High Pass Filter	L3	5
b.	Explain the frequency response of LPF, HPF, BPF and BRF,	L3	5