AJAY KUMAR GARG ENGINEERING COLLEGE, GHAZIABAD
DEPARTMENT OF ECE
Sessional Test 2

Program: B. Tech
Session: 2024-25
Subject: Fundamentals of Electronics Engineering
Max. Marks: 50

Semester: I
Section: S11-S20
Subject Code: BEC-101
Time: 2 Hours

OBE Remarks:

Q No.	1	2	3	4	5	6	7	8	9	10	11	12
CO No.	CO2	CO2	CO3	CO3	CO3	CO2	CO2	CO2	CO3	CO3	CO2	CO3
Bloom's Level* (L1 to L6)	L4	L4	L1	L3	L4	L2	L1	L2	L4	L1	L2	L2
Weightage CO2: 26.5						Weightage CO3: 23.5						

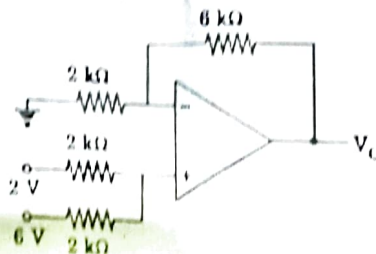*Bloom's Level: L1 Remember, L2 Understand, L3 Apply, L4 Analyze, L5 Evaluate, L6 Create

Note: Answer all the sections.

## Section-A   (2*5=10)

1. Differentiate BJT and JFET.
2. Calculate β_{dc} and I_{cbo} if $I_B = 5mA$, $I_c = 4.95mA$, $I_{ceo} = 200\mu A$.
3. What is CMRR? $2\log_{10}(Ad/ac)$
4. Write down the characteristics of ideal and practical Op-Amp.
5. Determine the output voltage of the following circuit

Section-B   (5*5=25)

6. Draw and explain the input and output characteristics of common emitter configuration.
7. Describe the construction, working and characteristics of n-channel Junction Field Effect Transistor.
8. Draw the basic structure of Common base BJT and explain its principle of operation, with its input and output characteristics. Also mark all the regions of operation.
9. Explain the concept of virtual ground in OP-AMP. Determine the output voltage of an op-amp for input voltages of $V_{i1} = 250\mu V$ and $V_{i2} = 190\mu V$. The amplifier has a differential gain of $A_d = 3000$ and the CMRR is 100.
10. Define Op-amp with the help of block diagram. Determine the output voltage for a given network
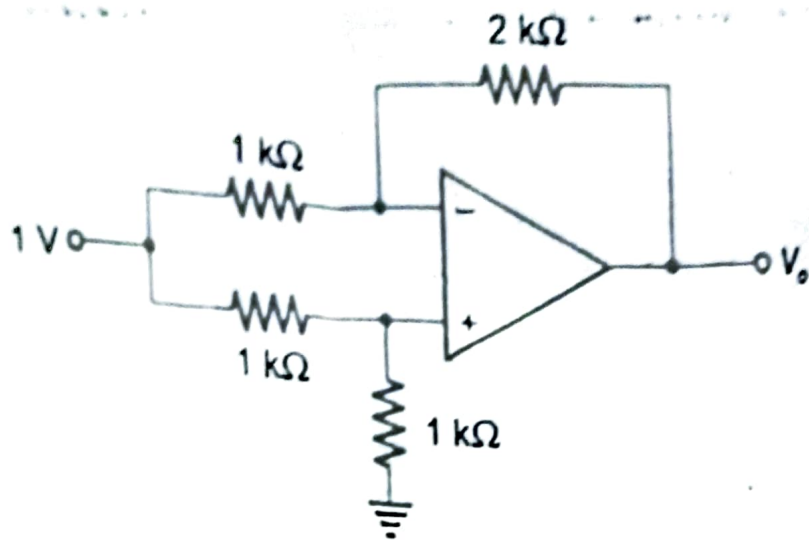
Section-C

n construction, working and characteristiçs of p-channel Enhancement MOS

ntegrator circuit using Op-Amp.

Unity Gain Follower using Op-Amp.

Subtractor using Op-Amp.

HoD Si

Hinani