Roll No.:.....

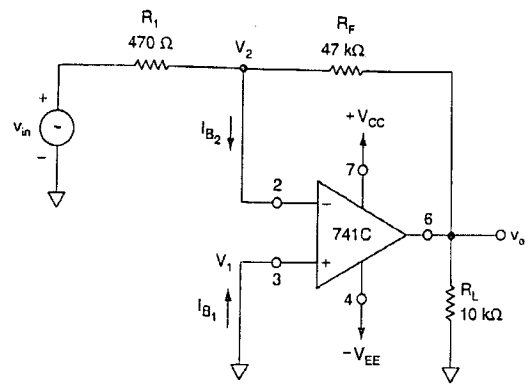
National Institute of Technology, Delhi

Mid Semester Examination, October 2022 (B.Tech.)

Branch	**: ECE & EEE**	**Semester**	**: V**
Title of the Course	**: IC Applications**	**Course Code**	**: ECB 304**
Time	**: 1.5 Hours**	**Maximum Marks**	**: 25**

Attempt all questions. All questions carry equal marks. (5x5)

1) (a) Draw equivlent circuit of an Opamp and its ideal voltage transfer curve.
   (b) Write short note on voltage follower using opamp.
2) For a non inverting amplifier (with feedback), show that the closed loop voltage gain is reduced by a factor of (1+AB).
   Where, A is the open loop voltage gain and B is the gain of feedback loop.
3) What causes the gain of an op-amp to roll off after certain frequency? Derive the expression for Open loop voltage gain as a function of frequency.
4) **(a)** For the inverting amplifier given in following figure determine the maximum possible output offset voltage due to (i) Input offset voltage Vio. (ii) Input bias current I_B. The opamp is a type 741.
   (b) What value of Resistance (R_{OM}) is needed to reduce the effect of input bias current I_B?
   From the 741 data sheet following values are given:
   Vio max = 6 mV dc, I_B max= 500 nA dc at T_A = 25°C and supply is +15 (-15V).



5) **(a)** Write the characterictics of practical opamp. What is the use of negative feedback in opamp circuits?
   (b) Define slew rate, input offset voltage and input bias current.