

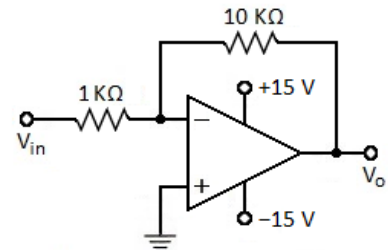
## TUTORIAL-X

**SEM-III, B.Tech(Computer Engineering), SVNIT, Surat**

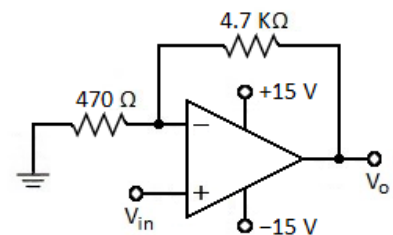
**Topic: Op-amp and its Applications**

**Subject: DELD**

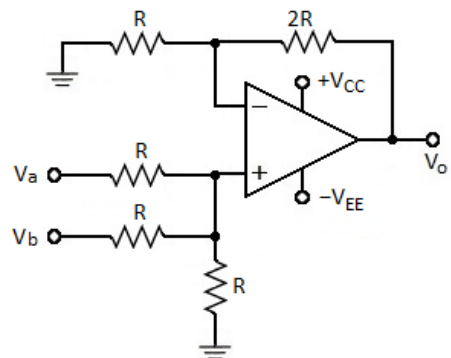
- 1) For the op-amp inverting amplifier shown here,  
i) Calculate the voltage gain  $A_F$ ,  
ii) Sketch the output waveforms if  $V_{in}$  is 1 Vp-p sinusoidal of 1 KHz and  
iii) Draw the IC realization diagram using op-amp IC741.



- 2) For the op-amp inverting amplifier shown here,  
i) Calculate the voltage gain  $A_F$ ,  
ii) Sketch the output waveforms if  $V_{in}$  is 0.5 Vp-p sinusoidal of 1 KHz and  
iii) Draw the IC realization diagram using op-amp IC741.



- 3) Determine the relation among  $V_o$ ,  $V_a$  and  $V_b$  for the given op-amp circuit.  
Comment on the results.



- 4) Design an op-amp amplifier to get output voltage,  $V_o = -(4V_x + 0.5V_y + V_z)$ . Where,  $V_x$ ,  $V_y$  and  $V_z$  are the input voltages.
- 5) Design op-amp subtractor circuit, explain the used configuration in brief.
- 6) Design the op-amp averaging circuit for the two-input.  
i) Use inverting configuration  
ii) Use non-inverting configuration
- 7) Draw the op-amp circuit and obtain its output voltage.  
i) Integrator  
ii) Differentiator