Problem No. – 09

Problem Name: Design a Wide Bandpass filter by cascading a -40dB/decade Low-pass Filter with a 40dB/decade High-Pass Filter

Calculation: l =Low pass , h =highpass

Given,

F(l) = 450Hz

F(h)= 3500Hz

Let,

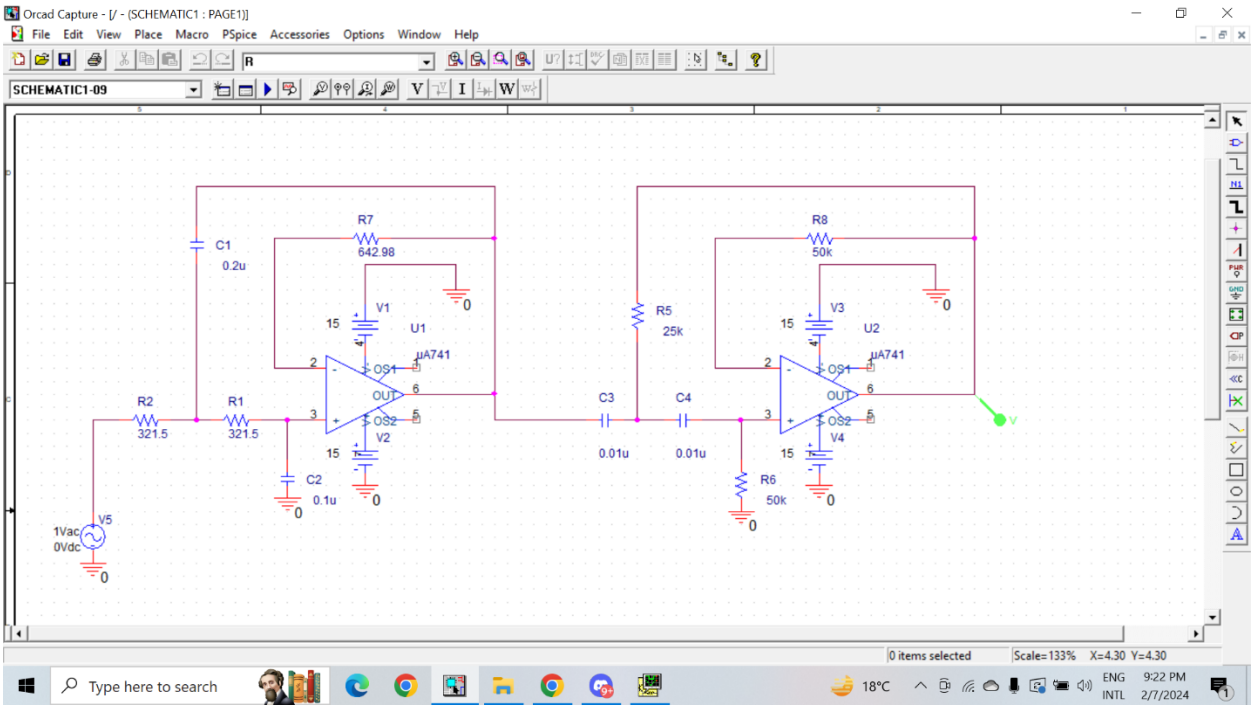
C(l)= 0.1uF

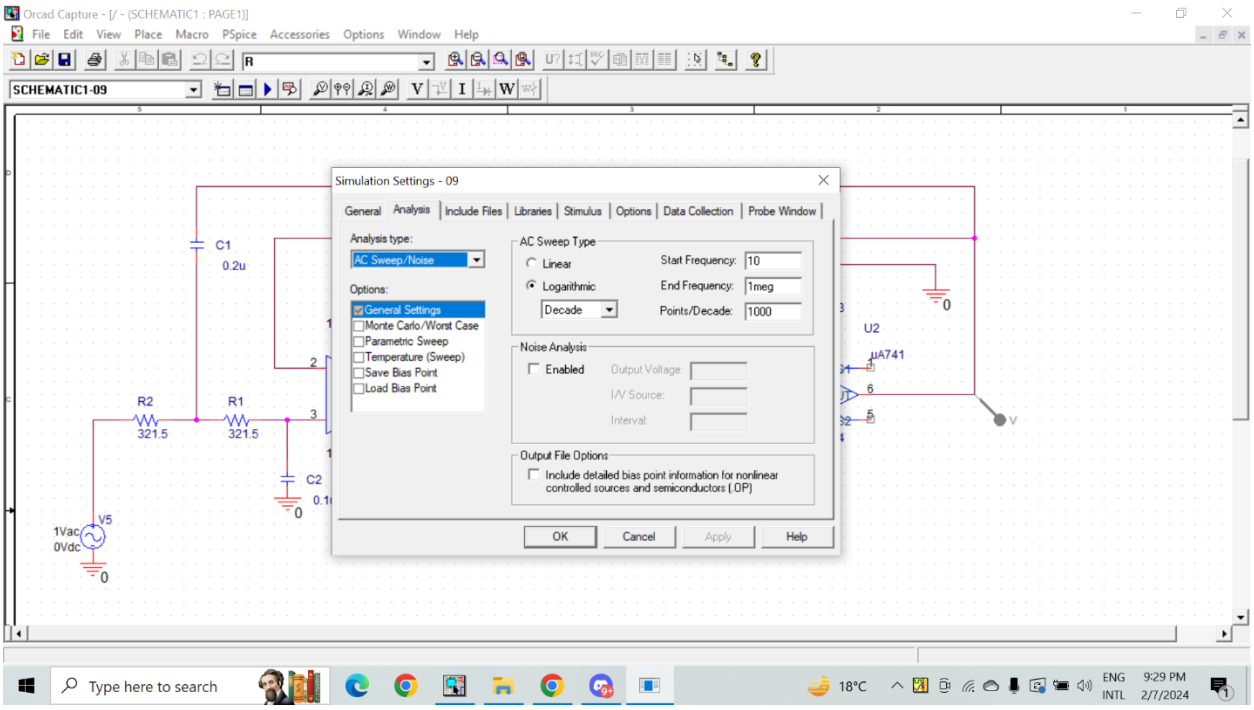
C(h)= 0.01uF

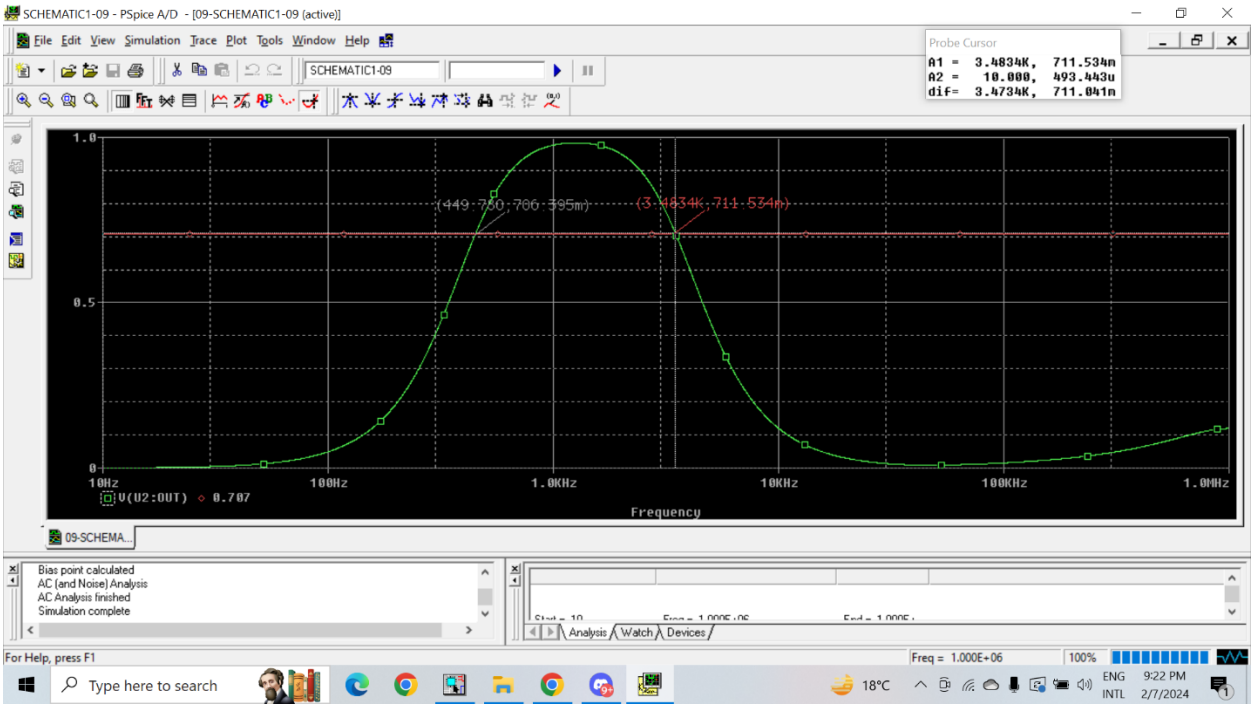
From the equation we get,

R(l)=321.5ohm

R(h)=50k-ohm


Orcad Capture - [/ - (SCHEMATIC1 : PAGE1)]
File Edit View Place Macro PSpice Accessories Options Window Help
SCHEMATIC1-09
R7
642.98
R8
50k
C1
0.2u
R5
25k
V1
V3
U1
U2
μA741
R2
321.5
R1
321.5
C3
C4
0.01u
0.01u
V2
V4
C2
0.1u
R6
50k
V5
1Vac
0Vdc
0 items selected
Scale=133%
X=4.30 Y=4.30
Type here to search
18°C
ENG
INTL
9:22 PM
2/7/2024


Orcad Capture - [/ - (SCHEMATIC1 : PAGE1)]
File Edit View Place Macro PSpice Accessories Options Window Help
SCHEMATIC1-09
Simulation Settings - 09
General
Analysis
Include Files
Libraries
Stimulus
Options
Data Collection
Probe Window
Analysis type:
AC Sweep/Noise
Options:
General Settings
Monte Carlo/Worst Case
Parametric Sweep
Temperature (Sweep)
Save Bias Point
Load Bias Point
AC Sweep Type
Linear
Logarithmic
Decade
Start Frequency: 10
End Frequency: 1meg
Points/Decade: 1000
Noise Analysis
Enabled
Output Voltage:
I/V Source:
Interval:
Output File Options
Include detailed bias point information for nonlinear controlled sources and semiconductors (.OP)
OK
Cancel
Apply
Help
C1
0.2u
R2
321.5
R1
321.5
C2
V5
1Vac
0Vdc
U2
μA741
Type here to search
18°C
ENG
INTL
9:29 PM
2/7/2024


SCHEMATIC1-09 - PSpice A/D - [09-SCHEMATIC1-09 (active)]
File Edit View Simulation Trace Plot Tools Window Help
SCHEMATIC1-09
Probe Cursor
A1 = 3.4834K, 711.534m
A2 = 10.000, 493.443u
dif= 3.4734K, 711.041m
1.0
0.5
0
(449.750.706.395m)
(3.4834K, 711.534m)
10Hz
100Hz
1.0KHz
10KHz
100KHz
1.0MHz
V(U2:OUT) 0.707
Frequency
09-SCHEMA...
Bias point calculated
AC (and Noise) Analysis
AC Analysis finished
Simulation complete
Analysis Watch Devices
For Help, press F1
Freq = 1.000E+06
100%
Type here to search
18°C
ENG
INTL
9:22 PM
2/7/2024