

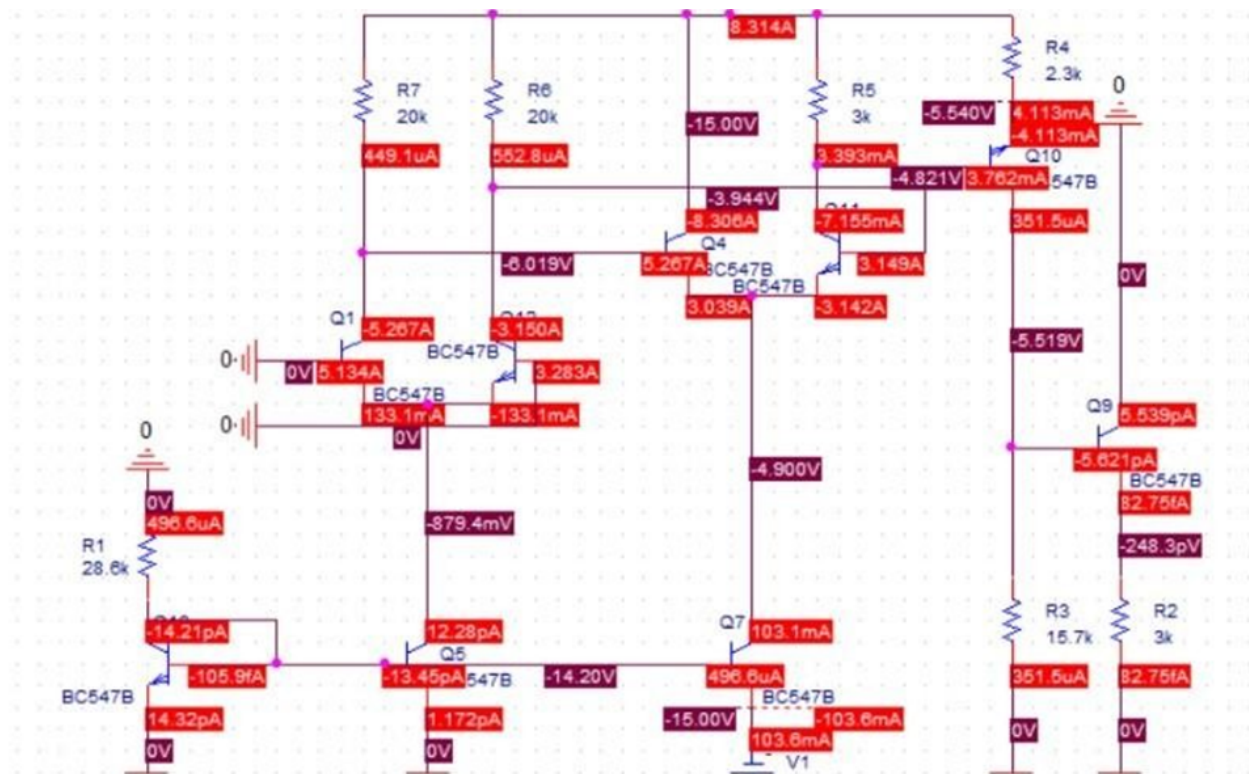
# **ANALOG ELECTRONICS**

**ANSHIKA JAIN**

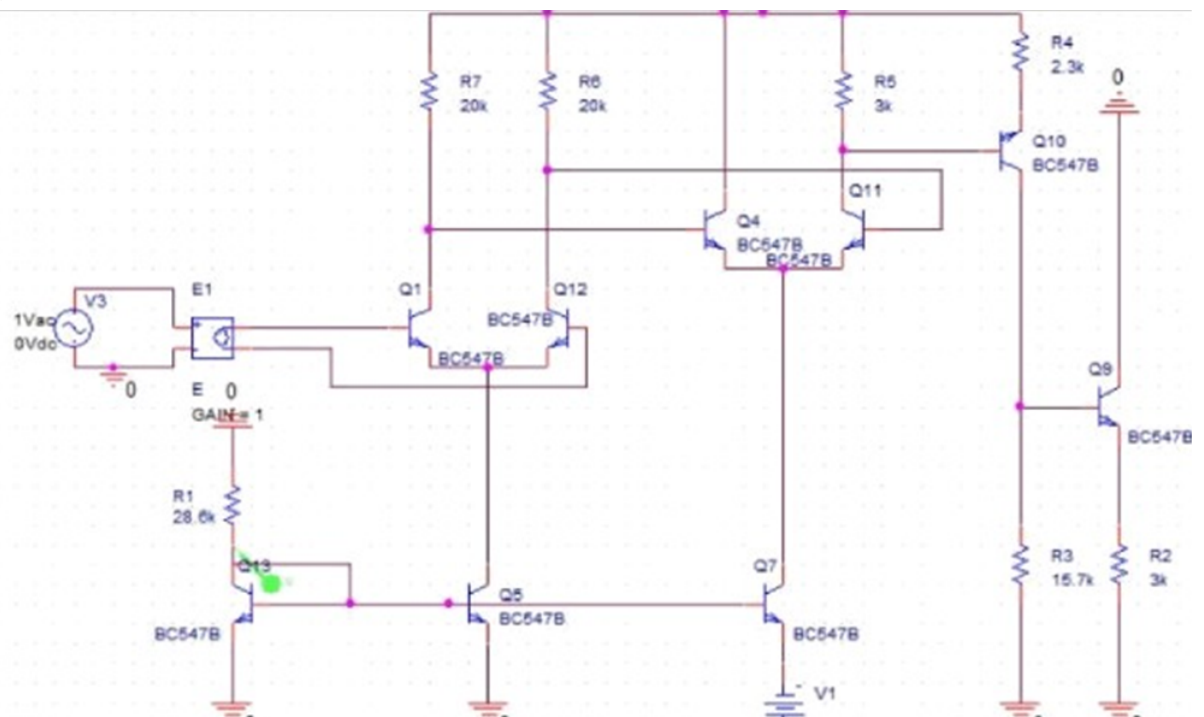
**19102052**

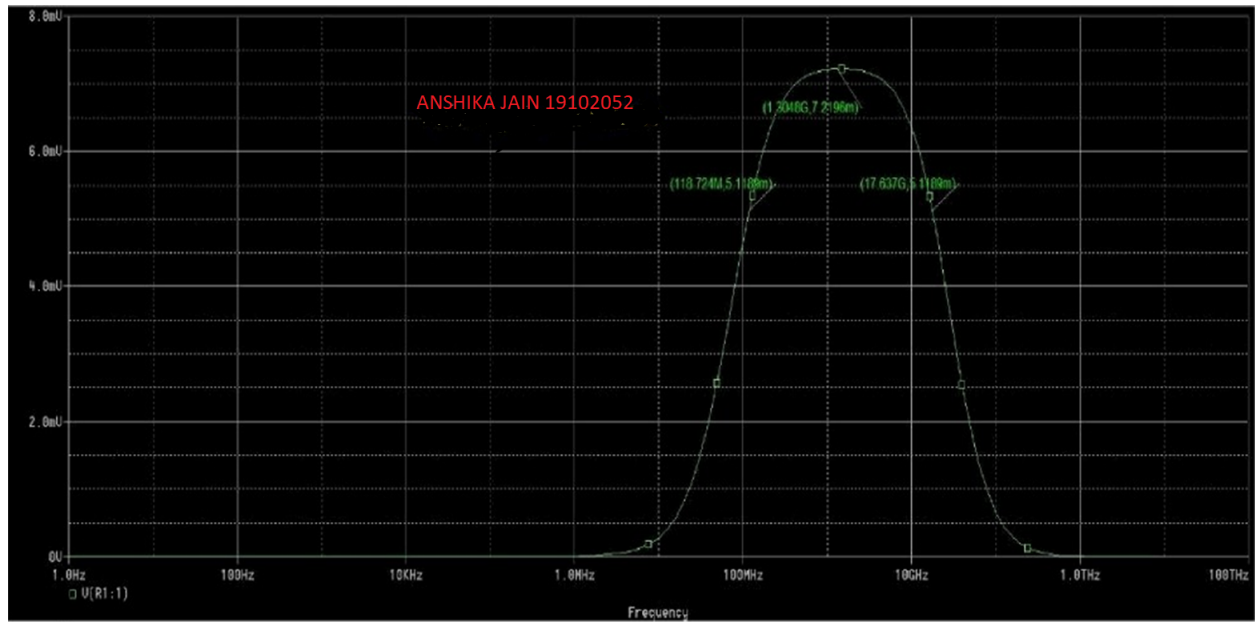
**A2**

**Q1**

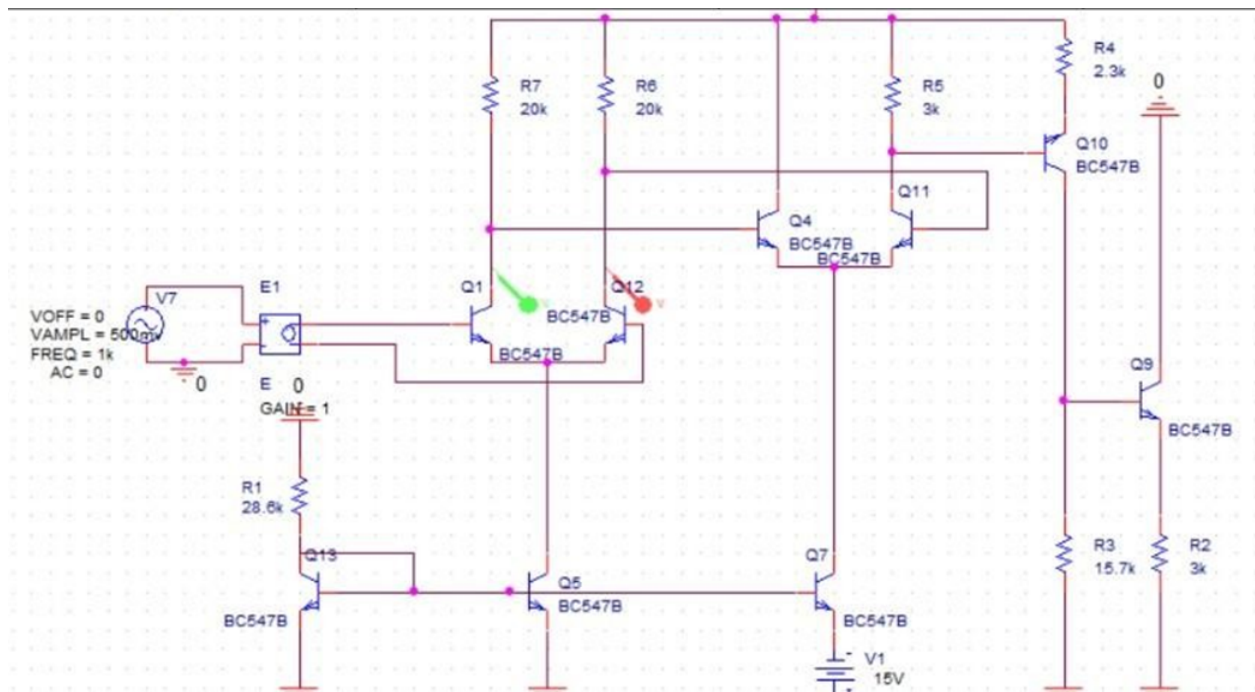


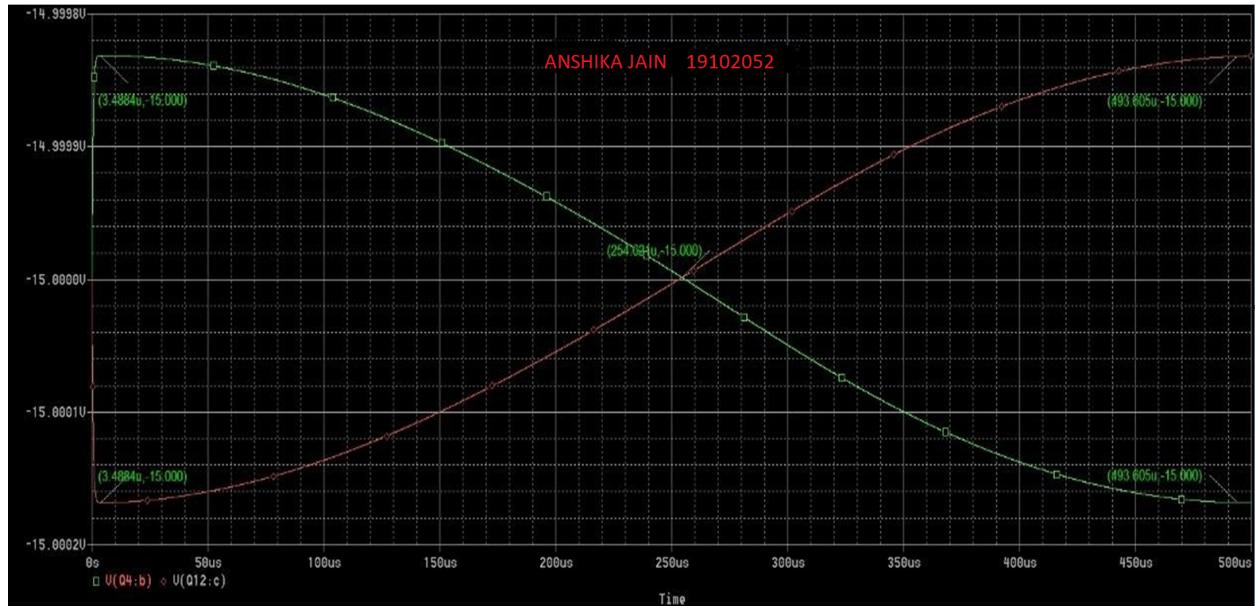
Q2)





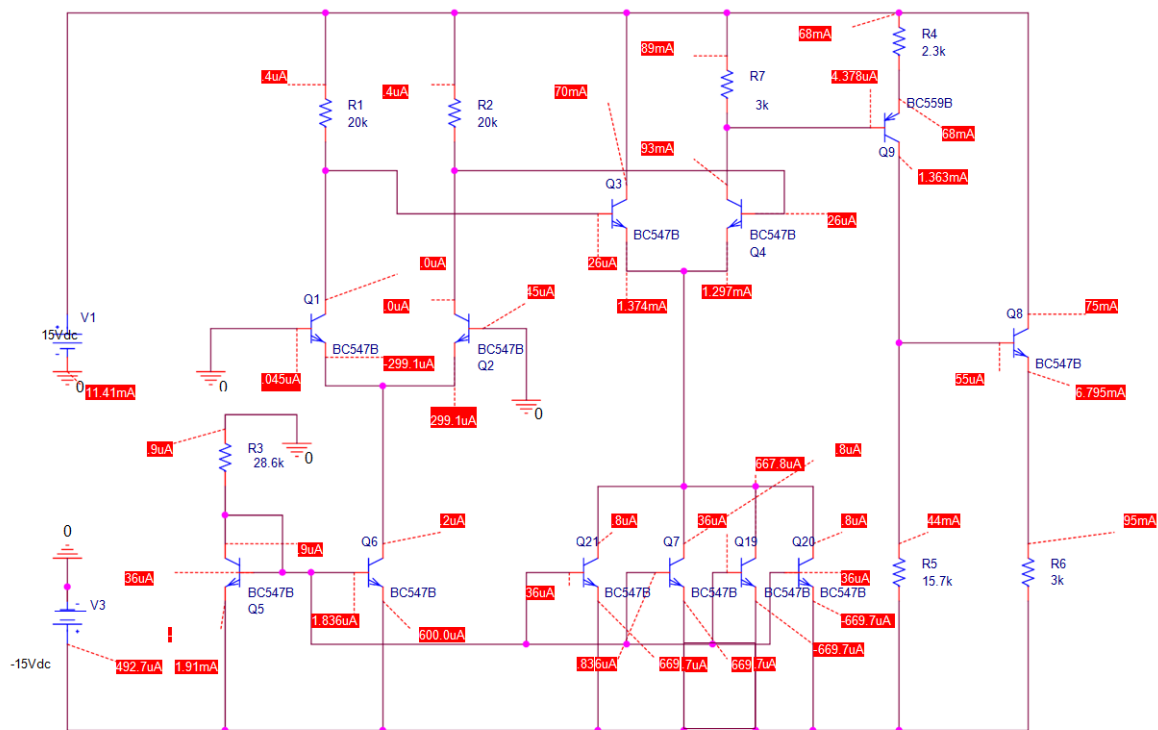
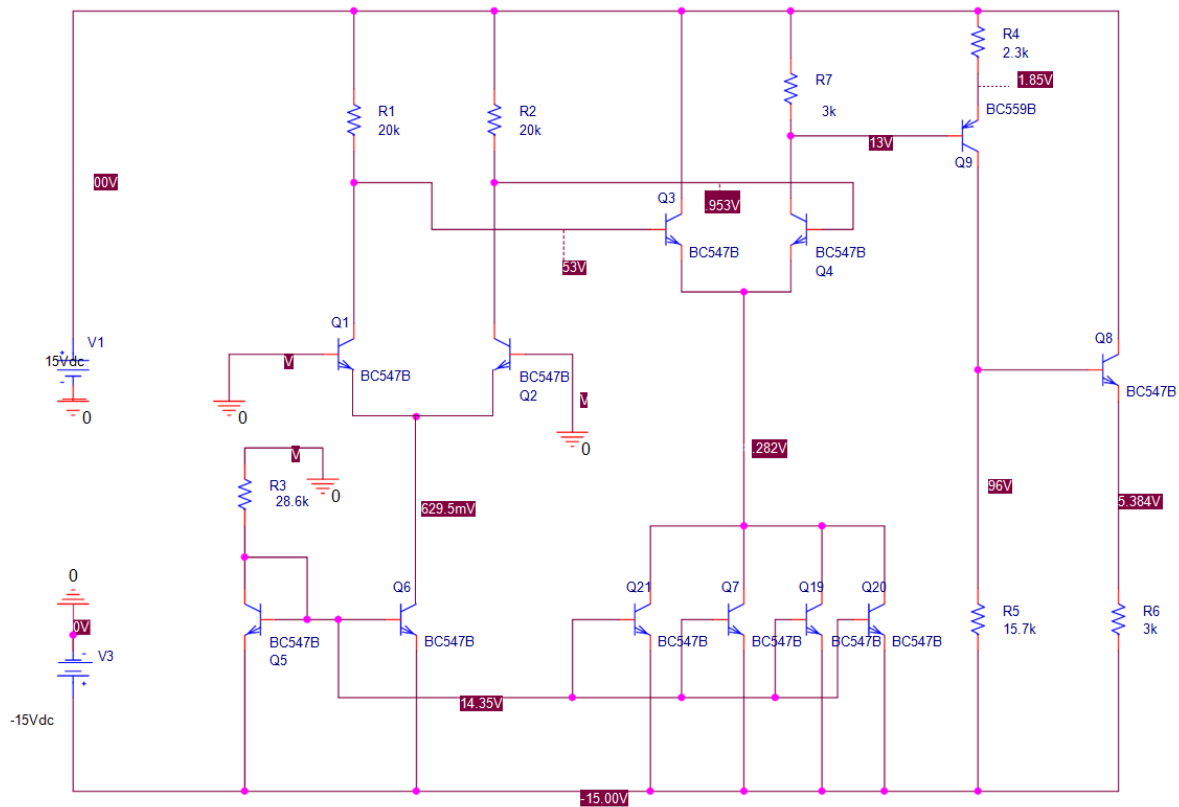
Q3)

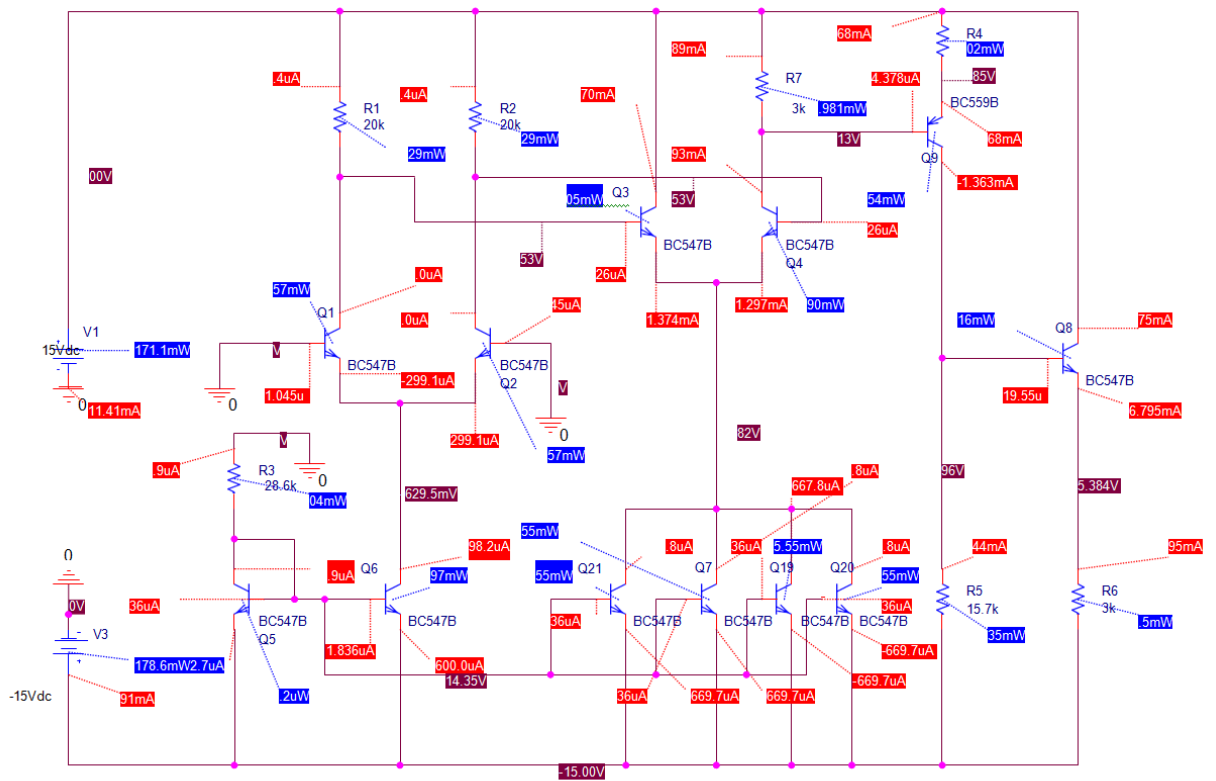
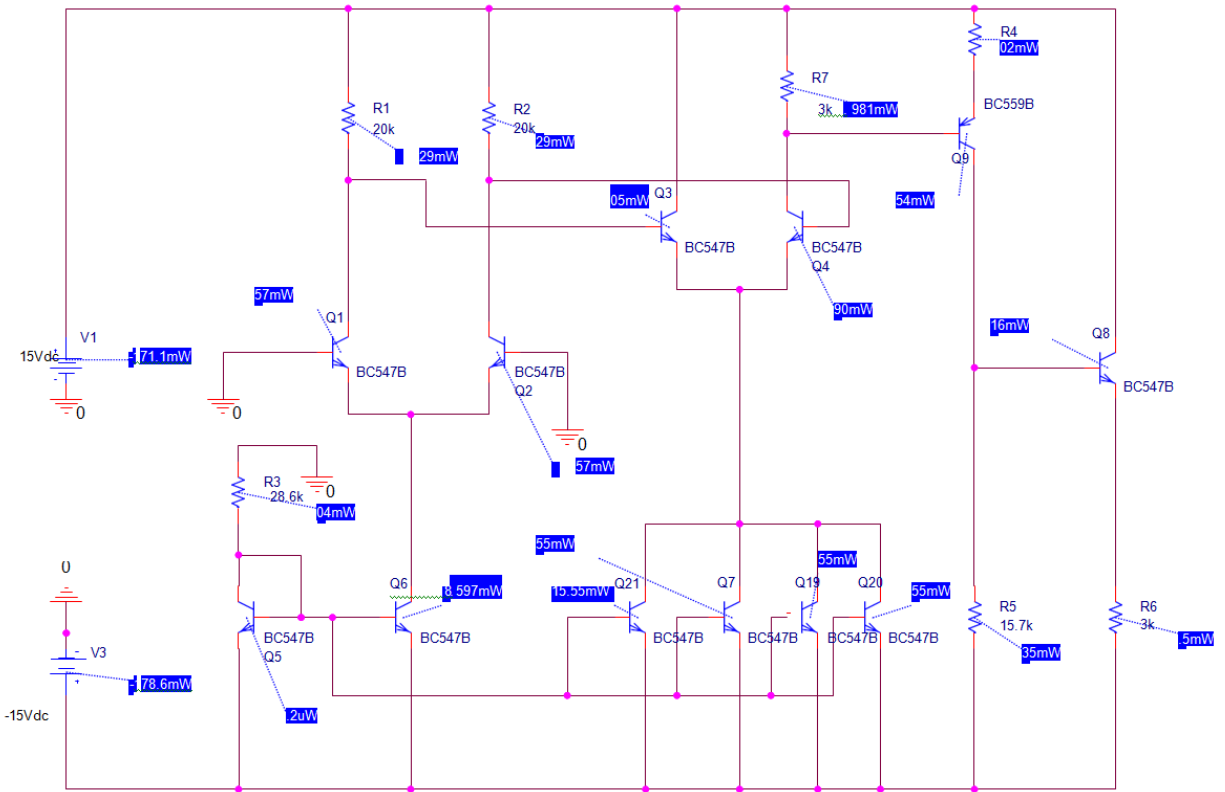




**CALCULATIONS:**

**USING MULTIPLE TRANSISTOR WITH CASCODE**





## LITE VERSION OF P SPICE IS UNABLE TO HANDLE LARGE NUMBER OF TRANSISTOR AS SHOWN

```
46 R_R5      N11673 N11043 15.7k TC=0,0
47 Q_Q6      N11285 N11379 N11673 BC547B
48 Q_Q1      N11035 0 N11285 BC547B
49 Q_Q5      N11379 N11379 N11673 BC547B
50 R_R7      N10995 N10869 3k TC=0,0
51 R_R4      N10949 N10869 2.3k TC=0,0
52 Q_Q21     N11135 N11379 N11673 BC547B
53 Q_Q3      N10869 N11035 N11135 BC547B
54 V_V5      N17960 0 -15Vdc
55 R_R9      N17246 N17110 3k TC=0,0
56 Q_Q23     N17110 N17286 N17386 BC547B
57 Q_Q33     N17386 N17632 N17960 BC547B
58 Q_Q25     N17286 N18507 N17536 BC547B
59 Q_Q31     N17386 N17632 N17960 BC547B
60 Q_Q28     N17632 N17632 N17960 BC547B
61 Q_Q24     N17246 N17290 N17386 BC547B
62 Q_Q30     N17386 N17632 N17960 BC547B
63 R_R14     N17960 N17560 3k TC=0,0
64 R_R10     N17286 N17110 20k TC=0,0
65 Q_Q27     N17110 N17294 N17560 BC547B
66 V_V4      N17110 0 15Vdc
67 Q_Q26     N17290 N18511 N17536 BC547B
68 R_R11     N17290 N17110 20k TC=0,0
69 R_R12     N17632 0 28.6k TC=0,0
70 R_R8      N17200 N17110 2.3k TC=0,0
71 Q_Q32     N17386 N17632 N17960 BC547B
72 R_R13     N17960 N17294 15.7k TC=0,0
73 Q_Q22     N17294 N17246 N17200 BC559B
74 Q_Q29     N17536 N17632 N17960 BC547B
75 V_V6      N18536 N18586 DC 0Vdc AC 1Vac
76 E_E1      N18507 N18511 N18536 N18586 1
77
78 **** RESUMING VACPBL.cir ****
79 .END
80
81 ERROR -- Circuit Too Large!
82 EVALUATION VERSION Limit Exceeded for "Q" Devices!
83
84
85
```