Q.2

Solution :-

Step 1. Given data

Step 2. Selection of Transistor

   Selection the transistors from data sheet as per requirement.

Step 3. Calculate voltage gain of individual stage.

   As per data given in the problems, stage 1 is FET and stage 2 is BJT.

Design of stage 2 (using BJT)

Step 4. Calculate Re

Step 5. Calculate Vecc

Step 6. Calculate Rs

Step 7. Calculate R1 and R2

Step 8. Calculate Cc and Cf

Design of stage 1 (using FET)

Step 9. Calculate Iq

Step 10. Calculate Vgs

Step 11. Calculate gm

Step 12. Calculate Rp

Step 13. Calculate Rs

Step 14. Calculate Rg

RG = 1MΩ

Step 15. Calculate C0

Step 16. Calculate Cs

Step 17. Calculate Cg

Step 18. Draw the circuit diagram
\[ f_0 = 2.69 \text{ KHz} \]

\[ L_9 = L_1 + L_2 = \pm \text{ mH} \]

\[ \frac{2 \pi \sqrt{L_9 C}}{1} = f_0 \]

\[ C = 0.5 \mu \text{F} \]

\[ L_2 = 2 \text{ mH} \]

\[ L_1 = 5 \text{ mH} \]

\[ \text{Solution:} \]

\[ 8.6 \]