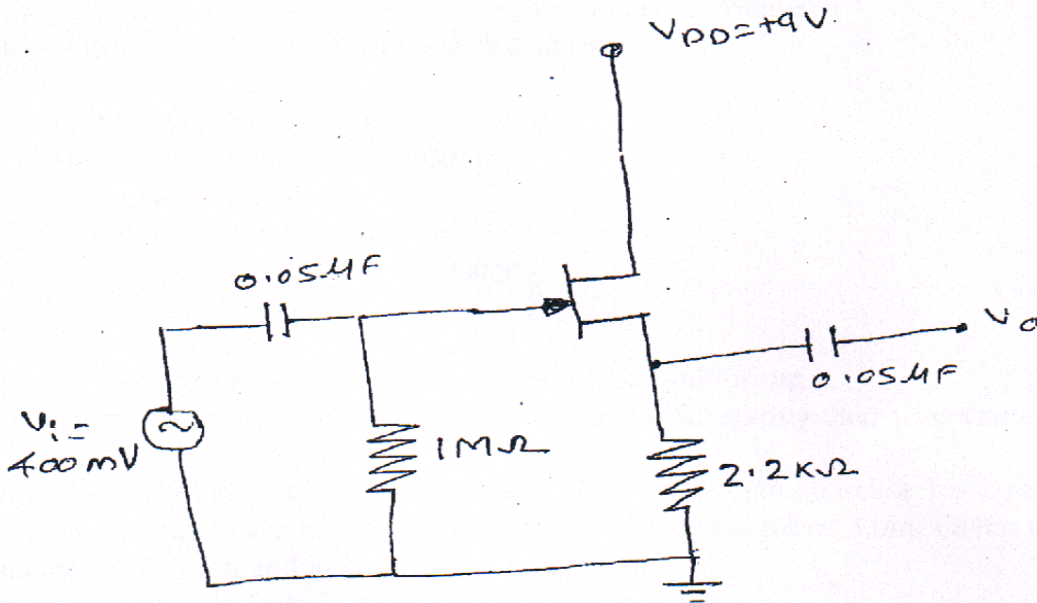


3. (a) Derive equations for Z_i , Z_o , A_v for common source configuration using voltage Divider Network (with unbypassed R_s) 10
 (b) Calculate Z_i , Z_o , A_v for the circuit shown below assume $I_{DSS} = 16\text{mA}$, $V_p = -4\text{V}$, $Y_{os} = 25 \mu\text{s}$ and $V_{GSQ} = -2.86\text{V}$ 10



4. (a) Explain OP.AMP as a Differentiator and Integrator. 10
 (b) Explain Successive Approximation Resistor A/D converter. 10
5. (a) Explain Instrumentation Amplifier using Transducer Bridge Circuit. 10
 (b) Design +9V regulator using LM 723 use current limit of 100mA. 10
6. (a) Explain the operation of monostable multivibrator using IC 555. 10
 (b) Explain OP-AMP as a
 (i) Comparator (ii) Summing Amplifier. 10
7. (a) Write short notes on :- 20
 (a) Features of 555 Timer
 (b) Zero crossing Detector
 (c) Inverting Schmitt trigger
 (d) PLL