

(3 Hours)

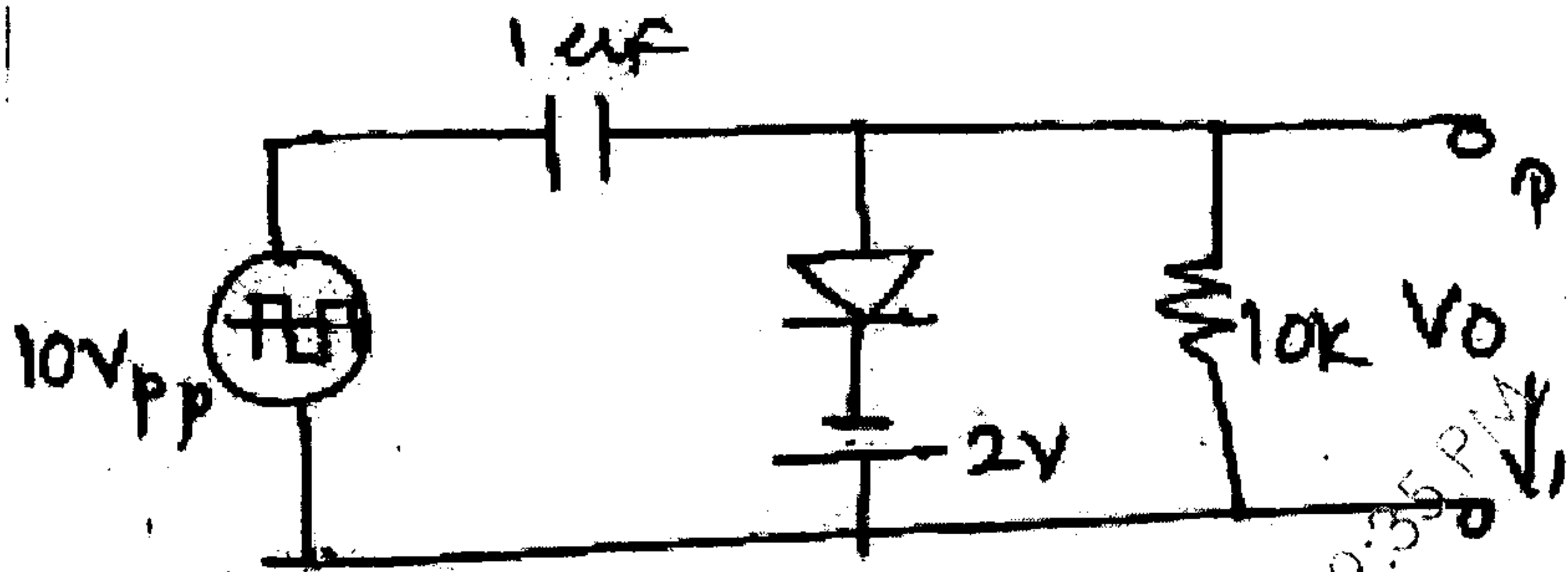
[Total Marks : 80

- N.B. : (1) Question no. 1 is **compulsory** and solve any three out of remaining questions.
(2) Assume suitable data if necessary.

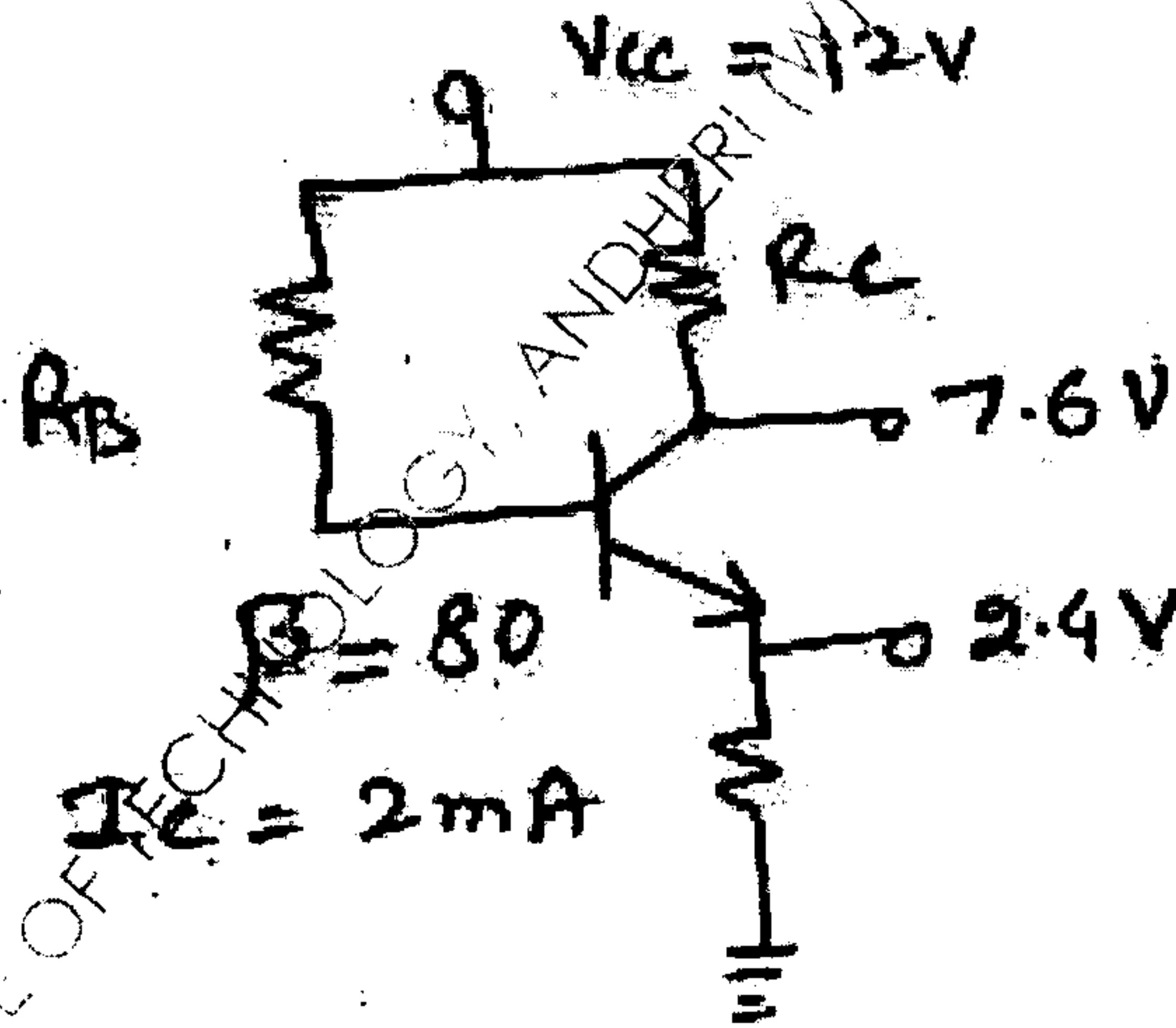
1. Solve any **five**

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- (a) Identify the circuit and draw output waveform with proper voltage levels.



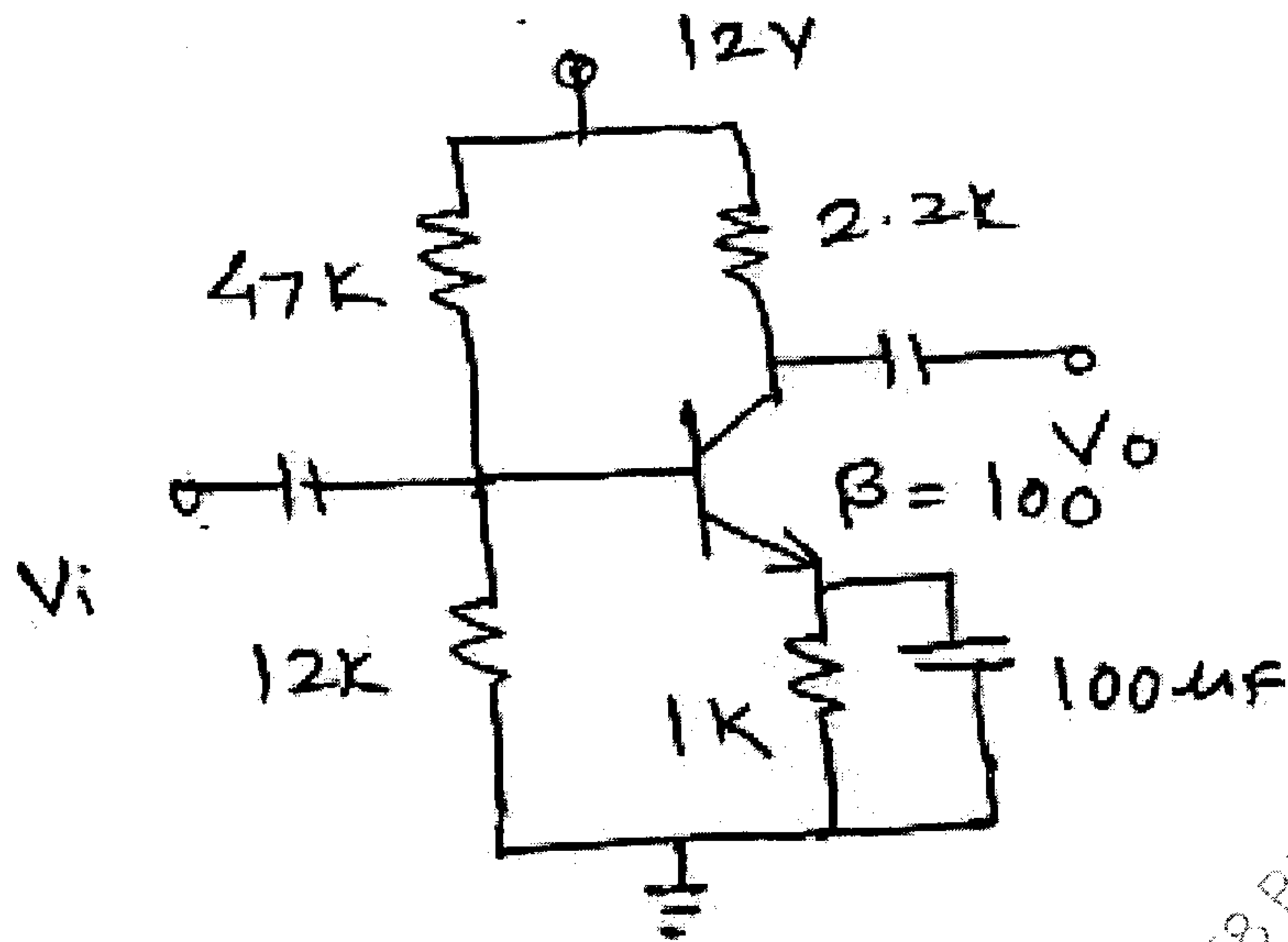
- (b) Determine R_C and R_B for the following circuit. Assume $V_{BE} = 0.7V$



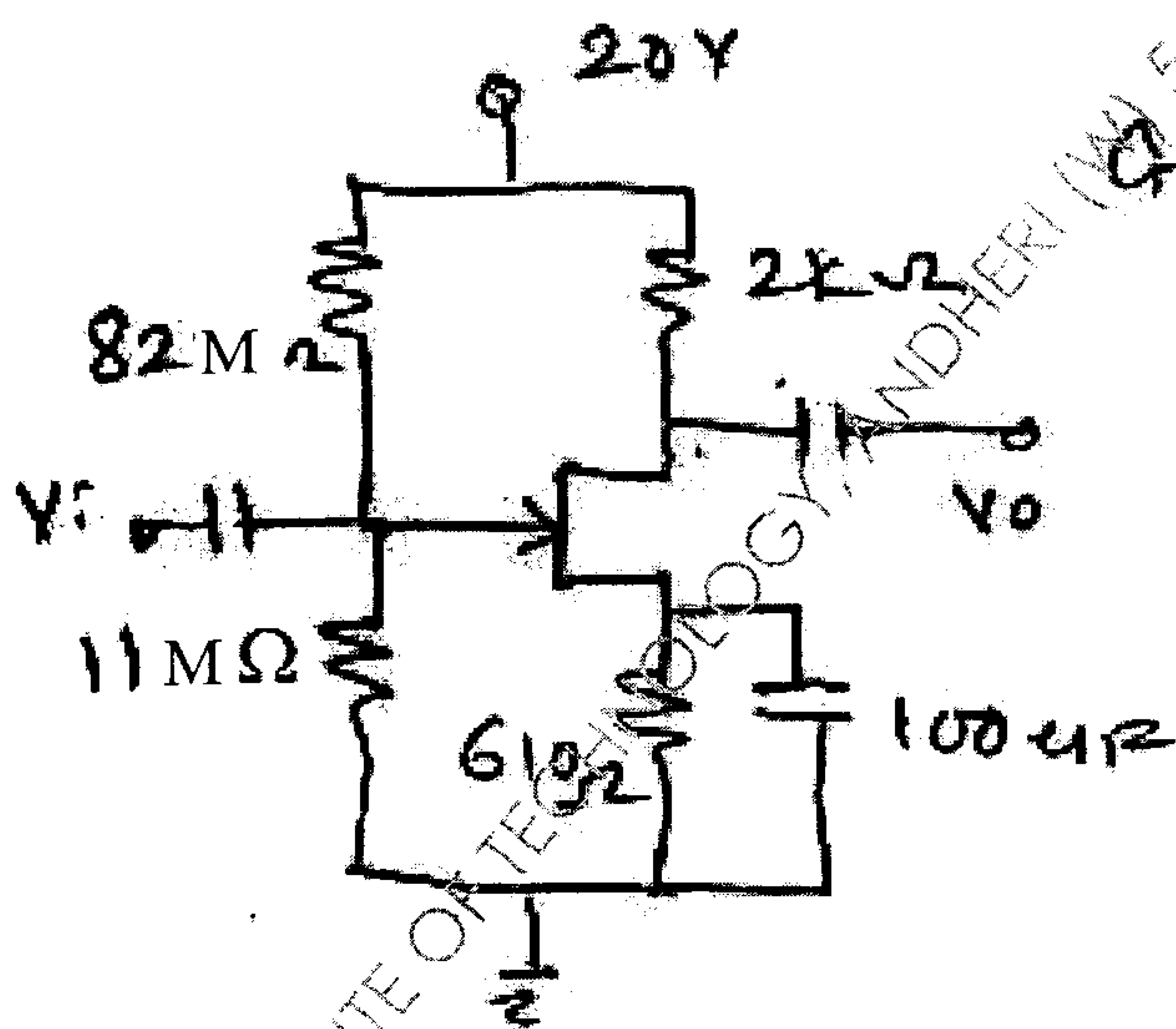
- (c) Compare D-MOSFET and E-MOSFET Considering Construction and characteristics.
(d) Explain working of Darlington connection and its advantages.
(e) State and explain Barkhausen Criteria.
(f) Compare class A with Class AB power amplifier.

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2. (a) For the following circuit shown, find operating point and plot DC load line. 10



(b) Determine A_v , Z_i and Z_o for the following circuit. 10

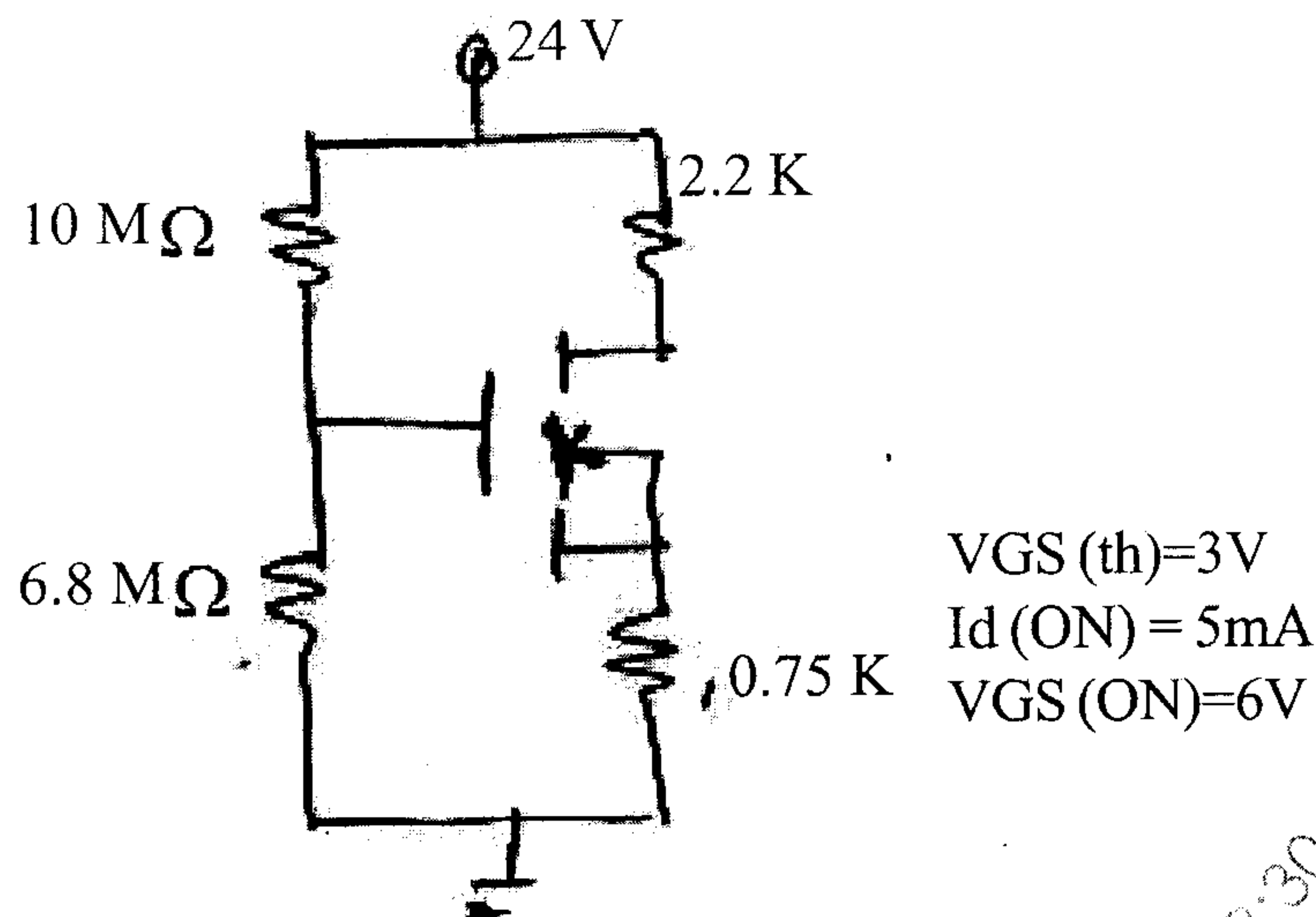


Given: $I_{DS} = 12mA$
 $V_p = -3V$
 $r_d = 100k$
 $g_m = 8mS$

3. (a) Derive expression for overall voltage gain, Z_i and Z_o for two stage (CS-CS) amplifier. 10
 (b) Explain advantages of negative feedback and suggest scheme for improving i/p and o/p impedance of amplifier with proper explanation 10

[TURN OVER]

4. (a) Derive expression for A_d , A_C and $CMRR$ for dual i/p - Balanced o/p differential amplifier. **10**
- (b) For the circuit shown, find I_{DQ} , V_{GSQ} , V_D and V_S **10**



5. (a) Explain working of class -B power amplifier, Derive expression for efficiency. **10**
- (b) Explain high frequency analysis of CS amplifier. **10**
6. Write short notes on **20**
- Hartley Oscillator
 - Constant current Source in Differential amplifier
 - Crossover distortion in class B
 - Comparison of common Base and Common Emitter amplifier.
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