

Please check whether you have got the right question paper.

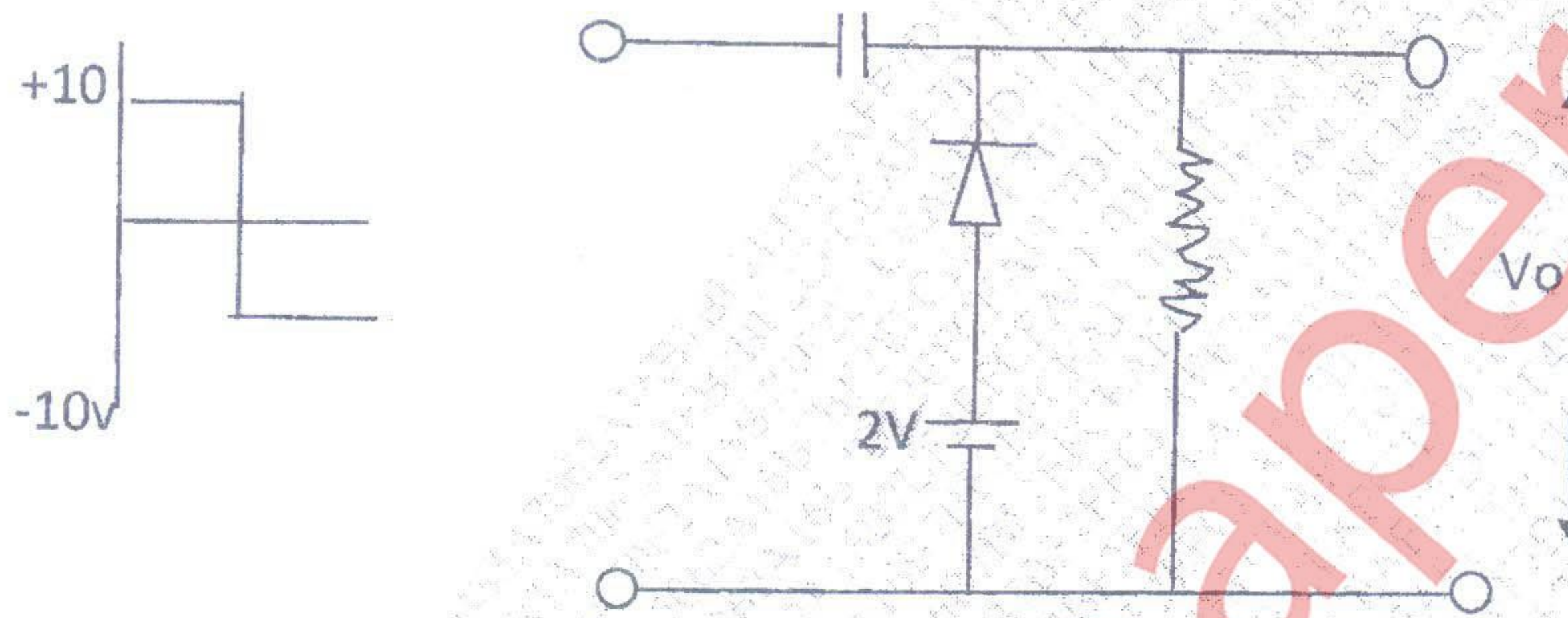
N.B:

1. Question no1 is compulsory and solve any three questions from remaining.
2. Draw neat and labeled diagrams.
3. Assume suitable data if it is required.

Q.1 Solve any five:

- 1) Draw the output waveform for following circuit. Identify the type.

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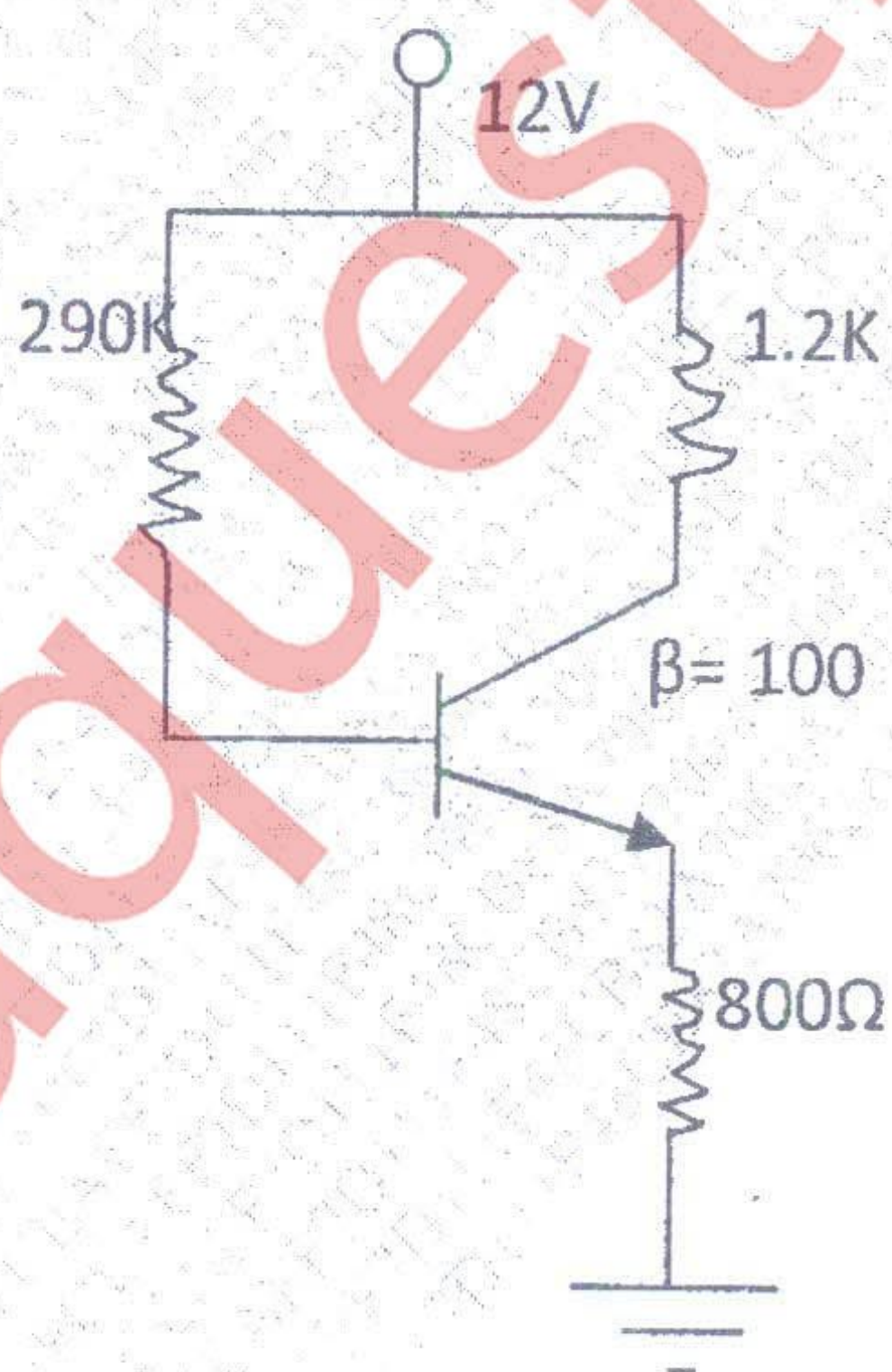


- 2) Explain any one biasing circuit used for E-MOSFET.
- 3) Explain effect of coupling and by pass capacitors on frequency response of CS amplifier.
- 4) State advantages of negative feedback.
- 5) Derive expression for efficiency of Class A Transformer coupled amplifier.
- 6) Compare CS amplifier with CE amplifier.

Q.2

- a) For the given circuit find  $I_B$ ,  $V_{CE}$ ,  $I_{CO}$ .

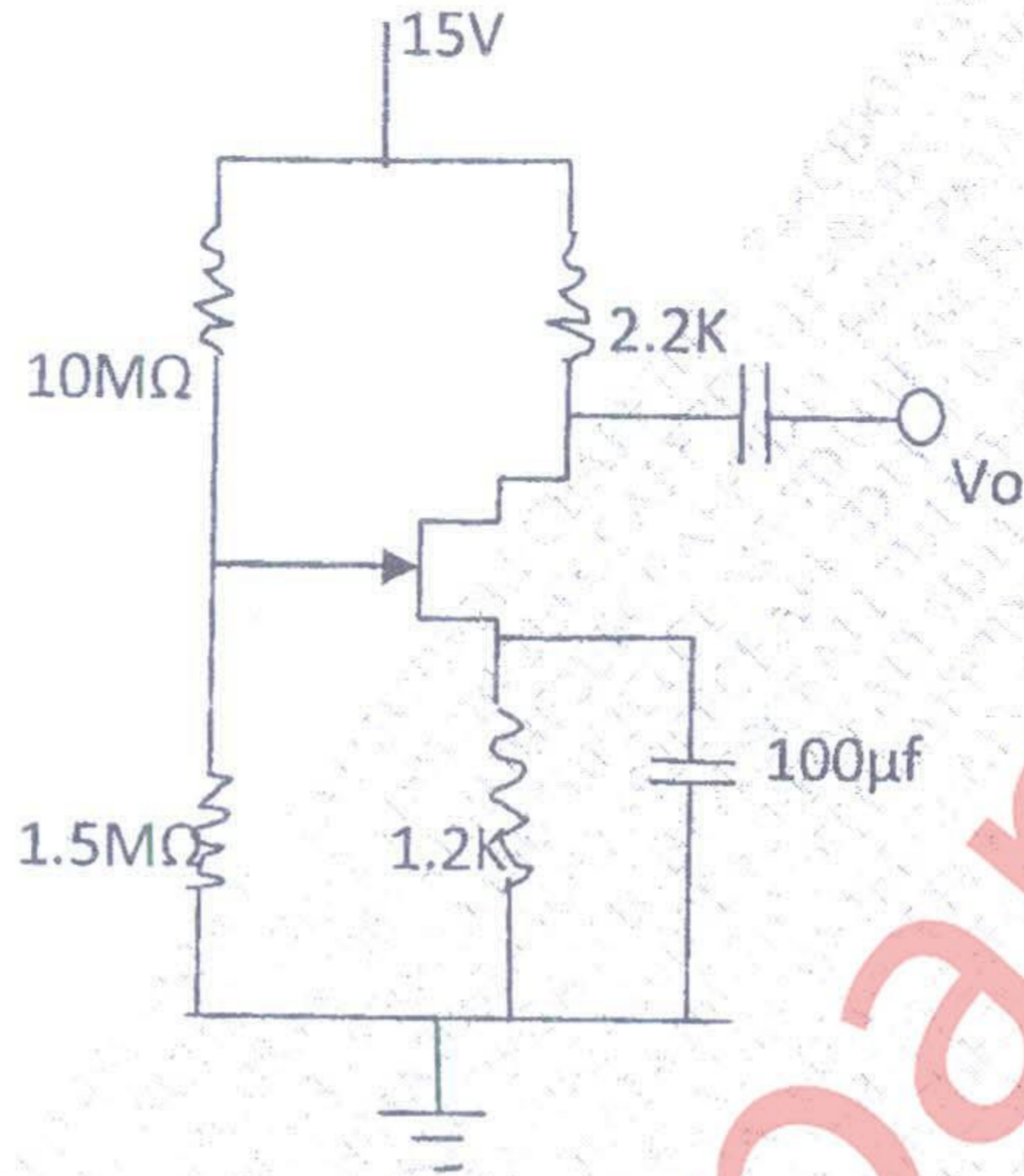
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- b) Explain working of CS amplifier using JFET and derive formula for voltage gain,  $R_i$  and  $R_o$ . (using self bias)

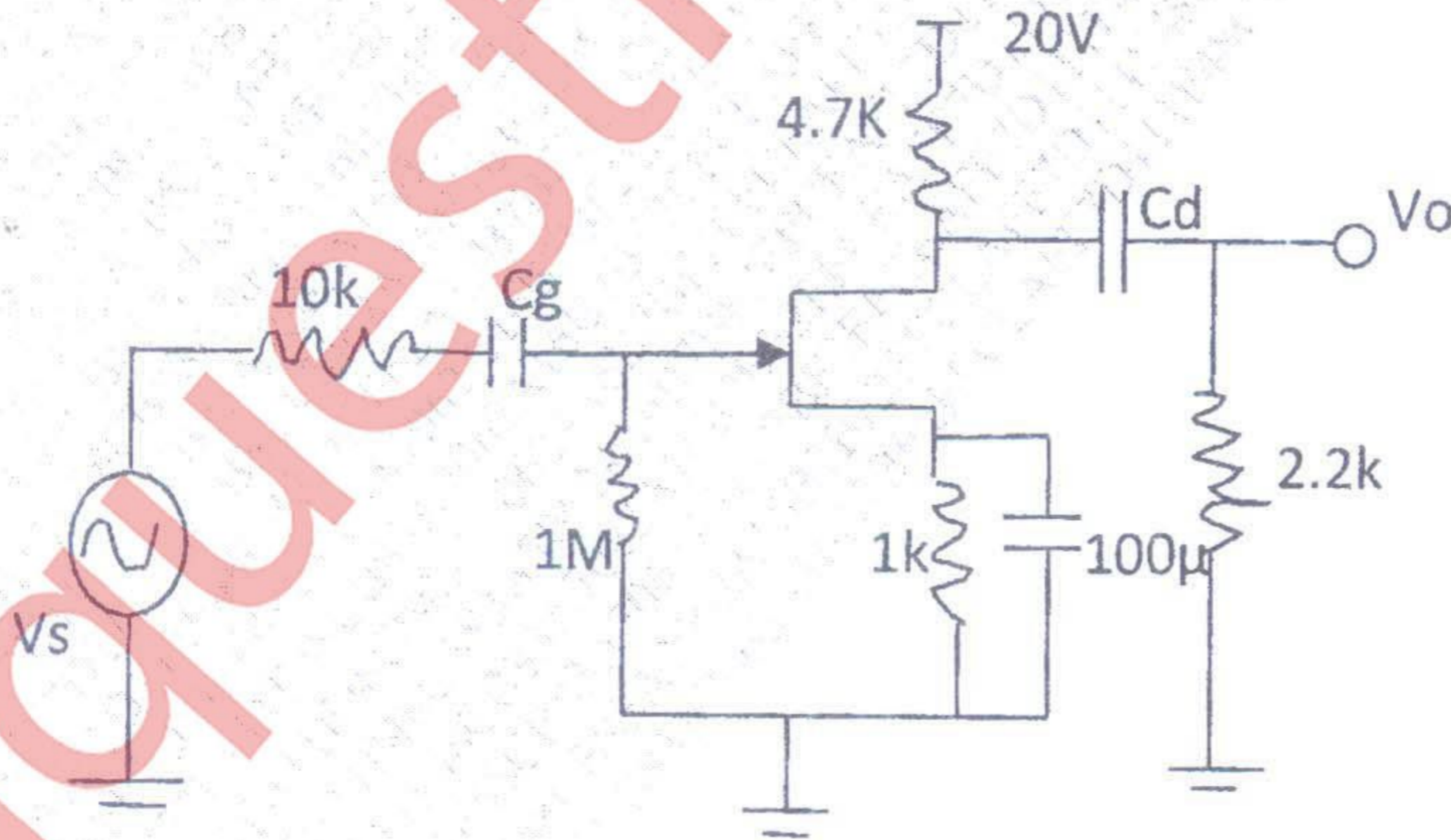
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- Q.3 a) Explain need for cascading amplifier stages. Explain working of CS-CE multistage amplifier and Derive expressions for  $A_{VT}$ ,  $R_i$  and  $R_o$ . 12  
 b) Explain working of Wein Bridge oscillator with the help of circuit diagram and give equation of frequency of oscillations. 08
- Q.4 a) For dual i/p balanced output diff amp derive expression for  $A_d$  and  $A_c$ . Suggest modification to improve CMRR. 10  
 b) For the following circuit calculate  $A_v$ ,  $R_i$  and  $R_o$ . 10



$I_{DSS}=8mA$ ,  $V_p=3V$ ,  $R_d=50k$

- Q.5 a) Prove that efficiency of Class B transformer coupled power amplifier is 78.5%. Suggest schemes For removing cross over distortion. 10  
 b) For the given circuit of CS amplifier find higher cut off frequency. 10



$I_{DSS}=8mA$ ,  $V_p=-4V$ ,  $r_d=\infty$

$c_{gd}=2pF$ ,  $c_{gs}=4pF$ ,  $c_{ds}=0.5pF$ ,  $c_{wi}=5pF$ ,  $c_{wo}=6pF$

( $c_{wi}$  &  $c_{wo}$  are wiring capacitances at i/p and o/p respectively.)

Q.6 Write short notes on any four:

- 1) Comparison of CB, CE and CC amplifier
- 2) Current series negative feedback
- 3) Constant current source (in diff amp)
- 4) Cascode amplifier
- 5) Heat sink used in power amplifiers.

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