

SELETRA / III (R)

BEC

1315/13

D : PH (April Exam) 198

Con. 6398-13.

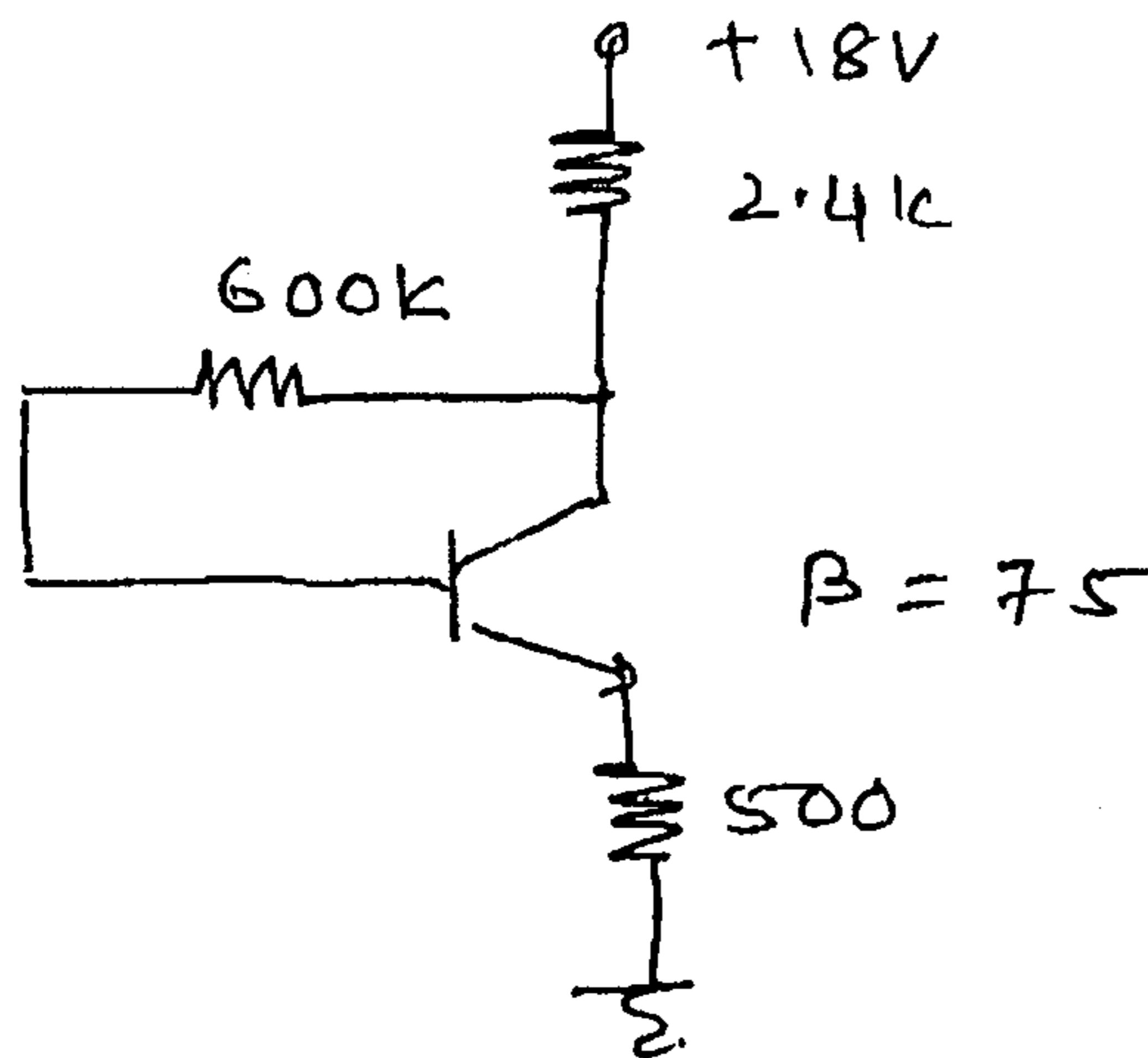
GS-6183

(3 Hours)

[Total Marks : 100

- N.B. (1) Question No. 1 is compulsory.
 (2) Answer any four out of remaining six questions.
 (3) Assume any suitable data wherever required.

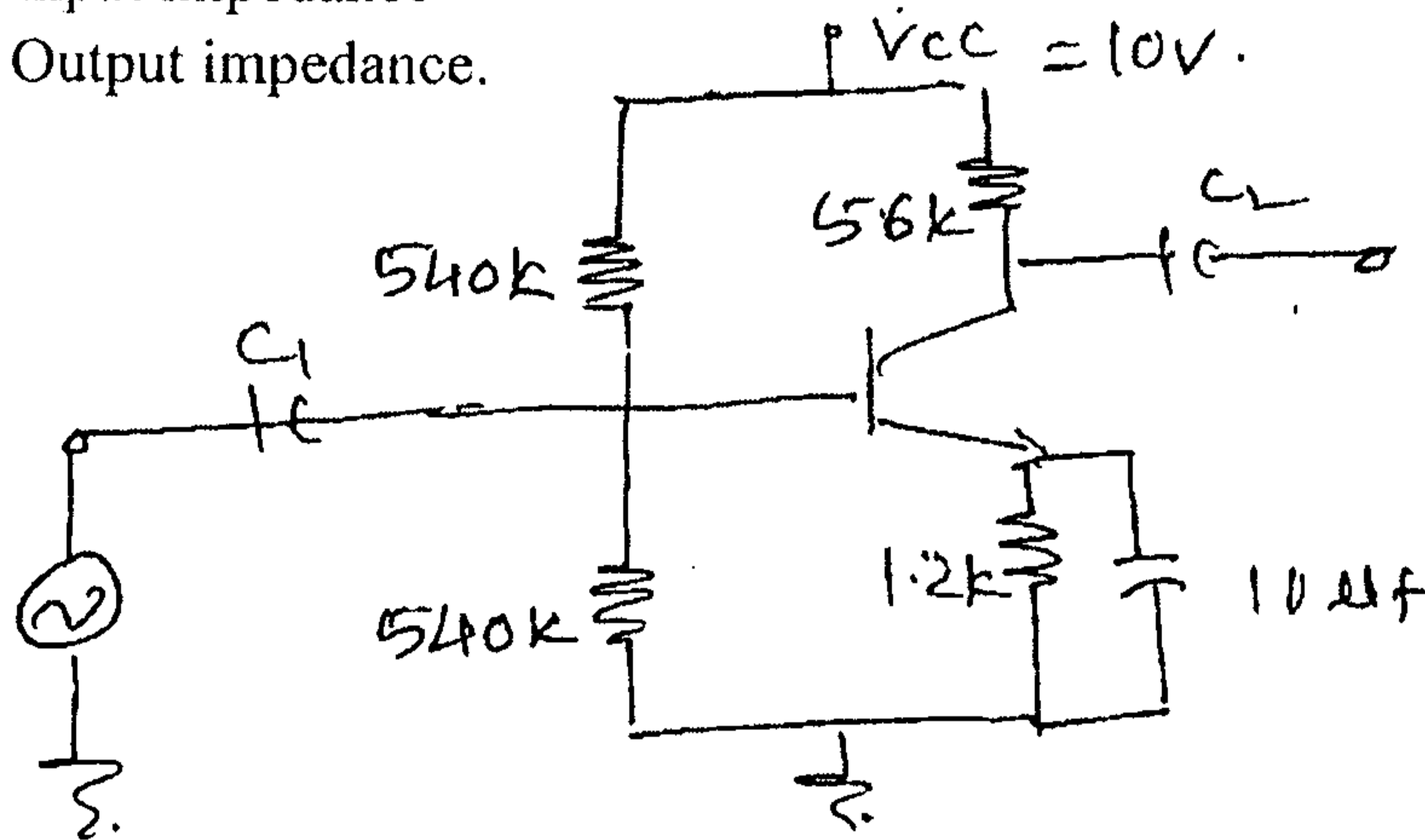
1. (a) Draw and explain positive clamper circuit. 5
 (b) Calculate D.C. collector current I_C and voltage V_{CE} for given circuit :- 5



- (c) Explain bias stabilization in BJT. 5
 (d) Derive the condition for zero temperature drift biasing of FET. 5
2. (a) A Fullwave rectifier employing a bridge rectifier using four diodes rectifies 230 V/50 Hz, mains and supplies 200 V, 0-100 mA to a resistive load employing a filter to give ripple factor of 0.05. Calculate the specifications of the diodes and filter component if the filter used is L & LC filter. 10
 (b) Explain the operation of fullwave rectifier and draw the output waveform for v_{Ldc} and I_{Ldc} . 10
3. (a) Design a single stage BJT CE amplifier for the following requirements : 15
 $A_v \geq 70$, $Z_i \geq 2.7 \text{ k}\Omega$, $V_o (\text{rms}) = 4.5 \text{ V}$
 $S = \pm 10$.
 (b) Determine A_v , Z_i , Z_o for design circuit. 5

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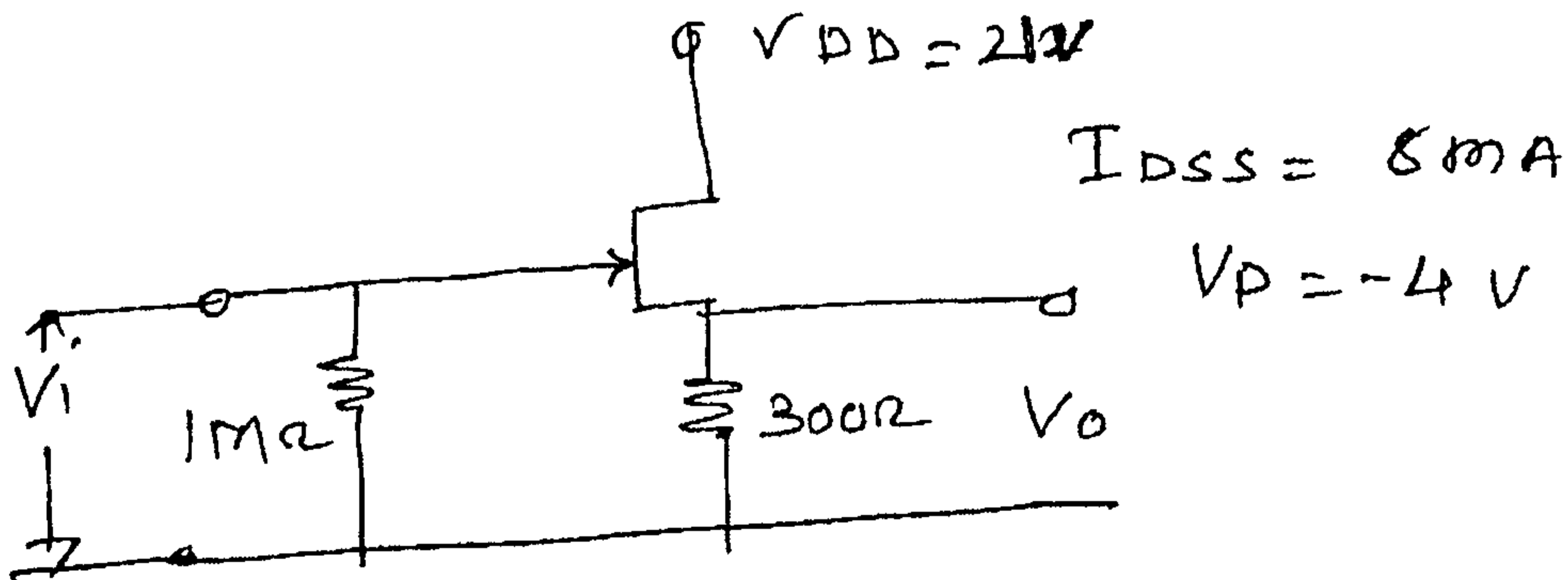
4. (a) For the circuit shown in **figure** determine, when RE bypass and unbypassed : 15
- (i) Voltage gain A_v
 - (ii) Current gain A_i
 - (iii) Input impedance
 - (iv) Output impedance.



$h_{ie} = 555k$
 $h_{fe} = 120$

- (b) Explain hybrid model of BJT 5

5. (a) Determine A_v , R_i , and R_o for the circuit shown in **figure**. 10



- (b) Draw neat diagram of CS amplifier with voltage divider (Bypassed R_s) configuration. Derive the expression for Z_i , Z_o and A_v . 10