

①  
①7

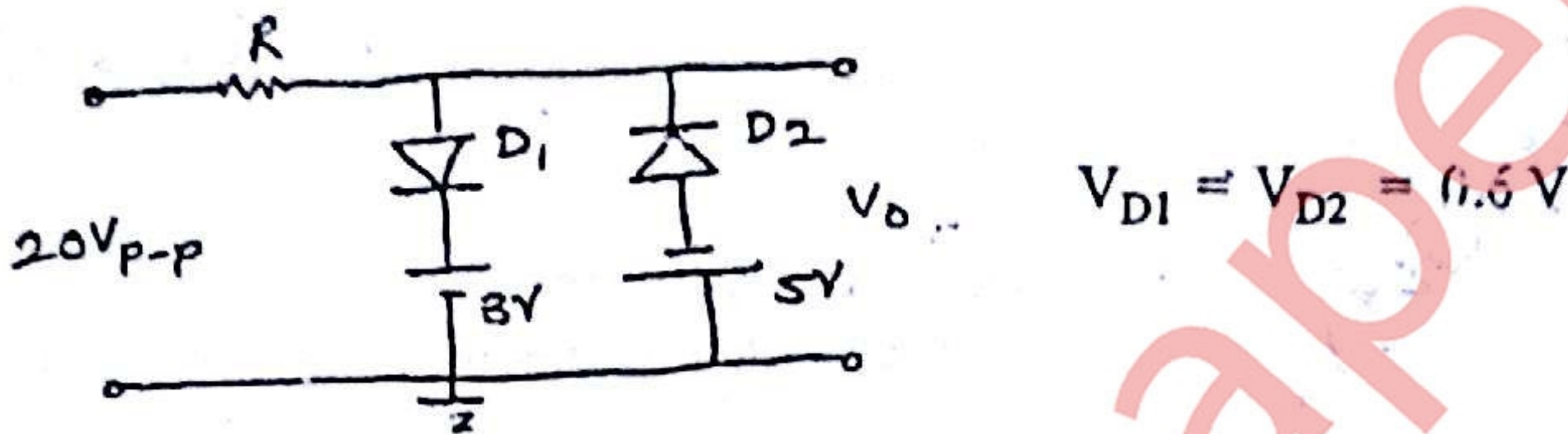
Q.P. Code : 4869

(3 Hours)

[Total Marks : 100]

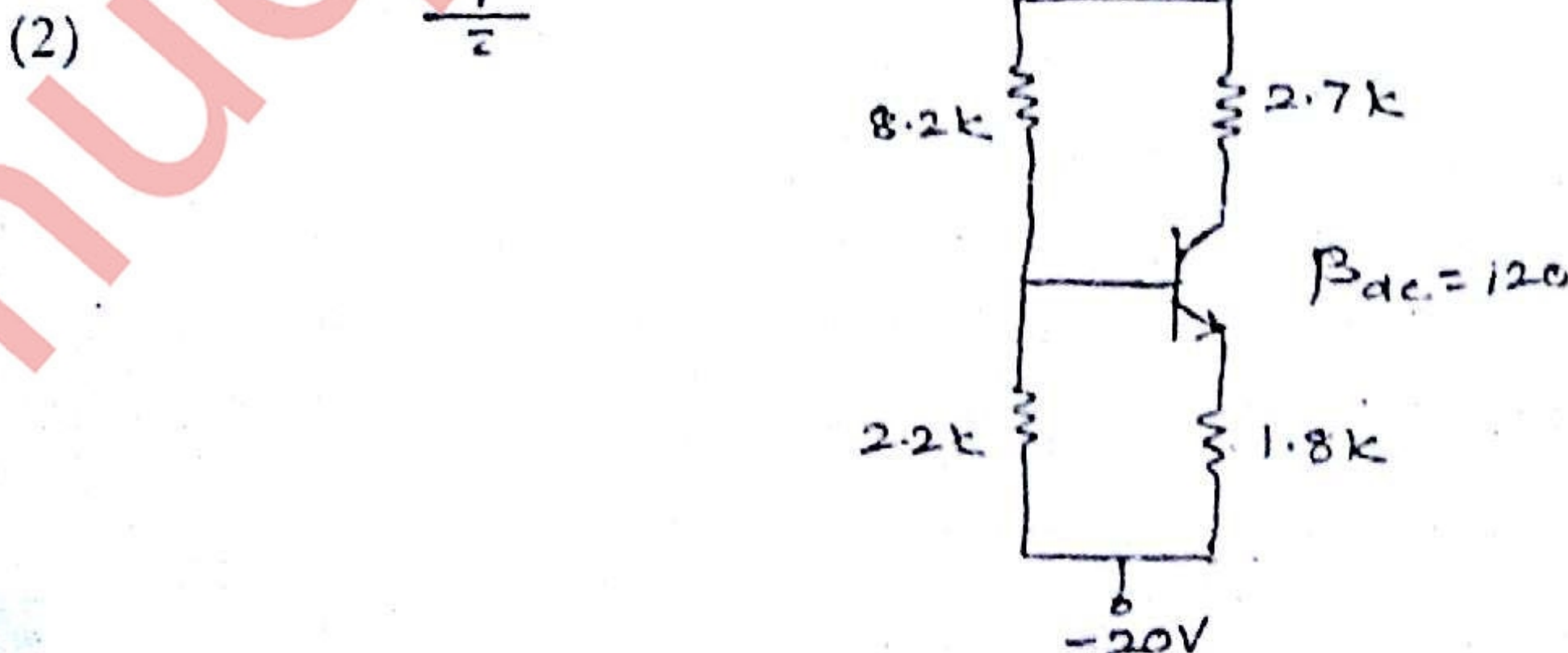
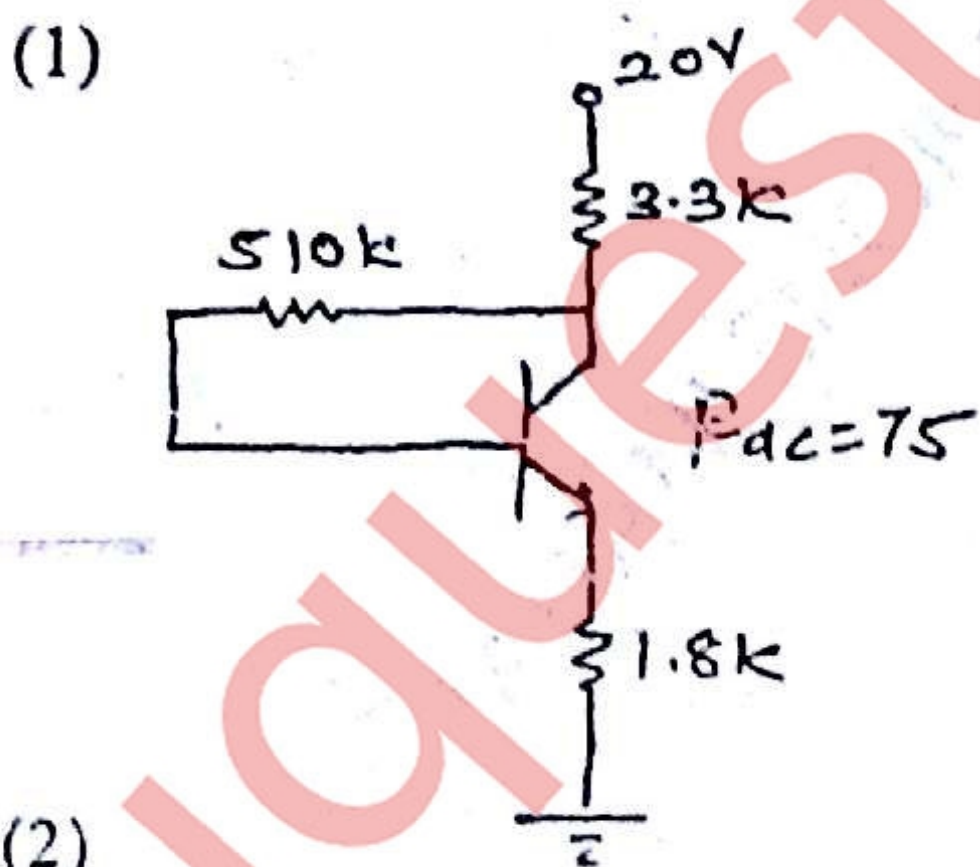
- N.B.: (1) Question No.1 is compulsory.  
 (2) Attempt any three out of remaining five questions.  
 (3) Assume suitable data wherever necessary.

1. (a) Draw and explain input-output characteristics in CE configuration. 5  
 (b) Derive stability factor for self bias network of BJT. 5  
 (c) Sketch the output waveform for following circuit. 5



- (d) Compare CS and CE Amplifier (circuit and parameters) 5

2. (a) Draw a neat diagram with proper biasing of JFET CG Amplifier. Derive expression for  $A_v$ ,  $Z_i$ ,  $Z_o$ . 10  
 (b) Calculate for the following circuits. 10  
 (i)  $I_B$  (ii)  $I_C$  (iii)  $V_{CE}$  (iv) BJT power consumption.





01/06/15

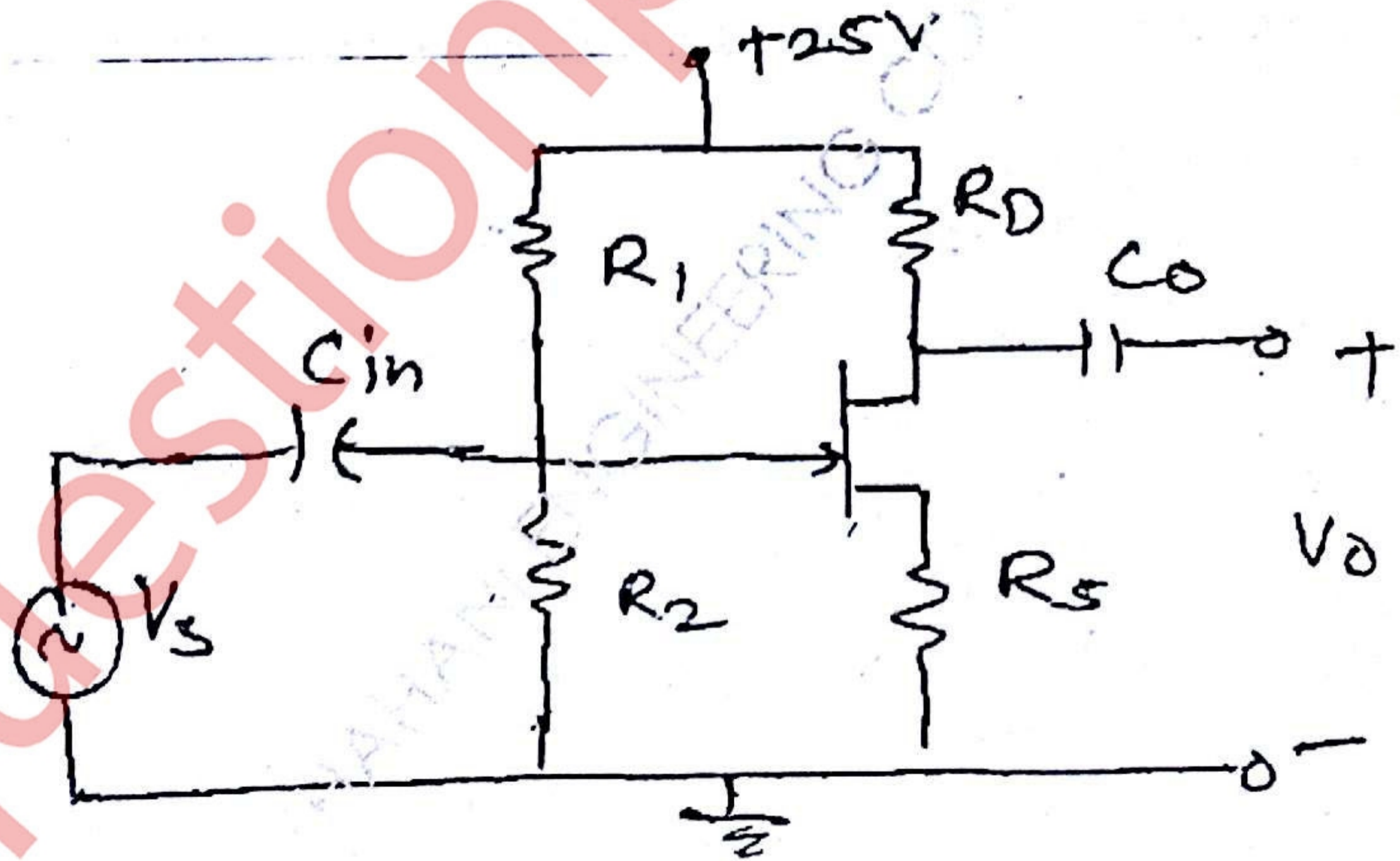
BM/III/CBGS

2

Q.P. Code : 4869

2

3. (a) Design a single stage RC coupled CE amplifier to meet the following specifications:-  
-  $V_O = 3$  Volts,  $V_{CC} = 20$  V  
 $A_V \geq 240$   
 $S \leq 10$   
 $R_L = 4.7$  k  $\Omega$   
For Audio frequency range.
- (b) For the above designed circuit calculate maximum expected voltage gain, input impedance and output impedance.
4. (a) Draw darlington amplifier. Derive expression for gain, input impedance and output impedance. Give advantages, disadvantages along with its applications.
- (b) Calculate Q point,  $A_V$ ,  $Z_{in}$  and  $Z_o$ .



Given :

$$I_{BSS} = 12 \text{ mA}$$

$$V_P = -3V$$

$$r_d = \infty$$

$$R_1 = 82 \text{ M}\Omega$$

$$R_2 = 11 \text{ M}\Omega$$

$$R_P = 2 \text{ k}\Omega$$

$$R_S = 610 \Omega$$



11/06/15

3

Bm/III / CBGS / ECA

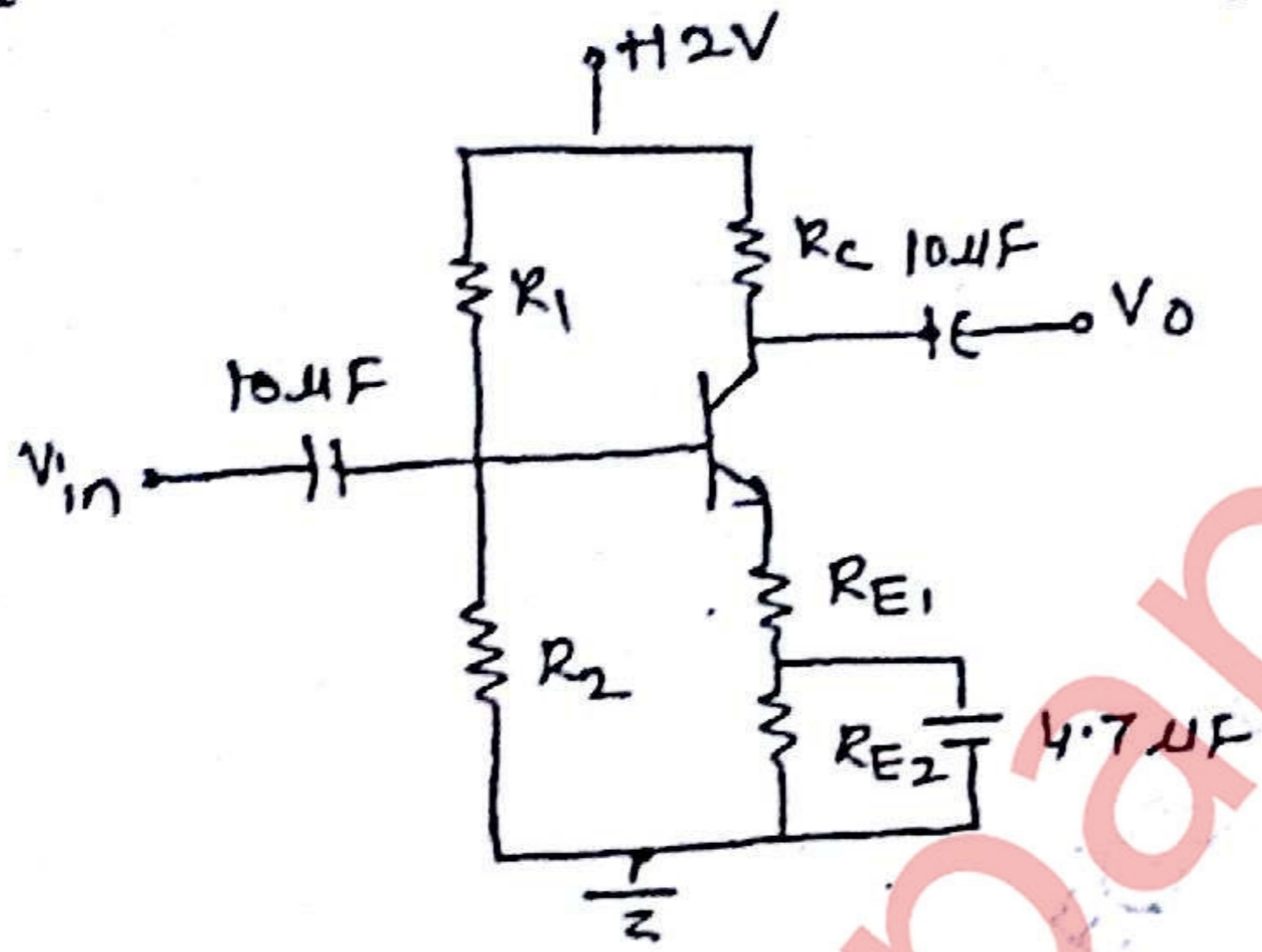
Q.P. Code : 4869

3

5. (a) Calculate  $A_v$ ,  $Z_{in}$ ,  $Z_o$  and  $f_L$  for the given circuit.

10

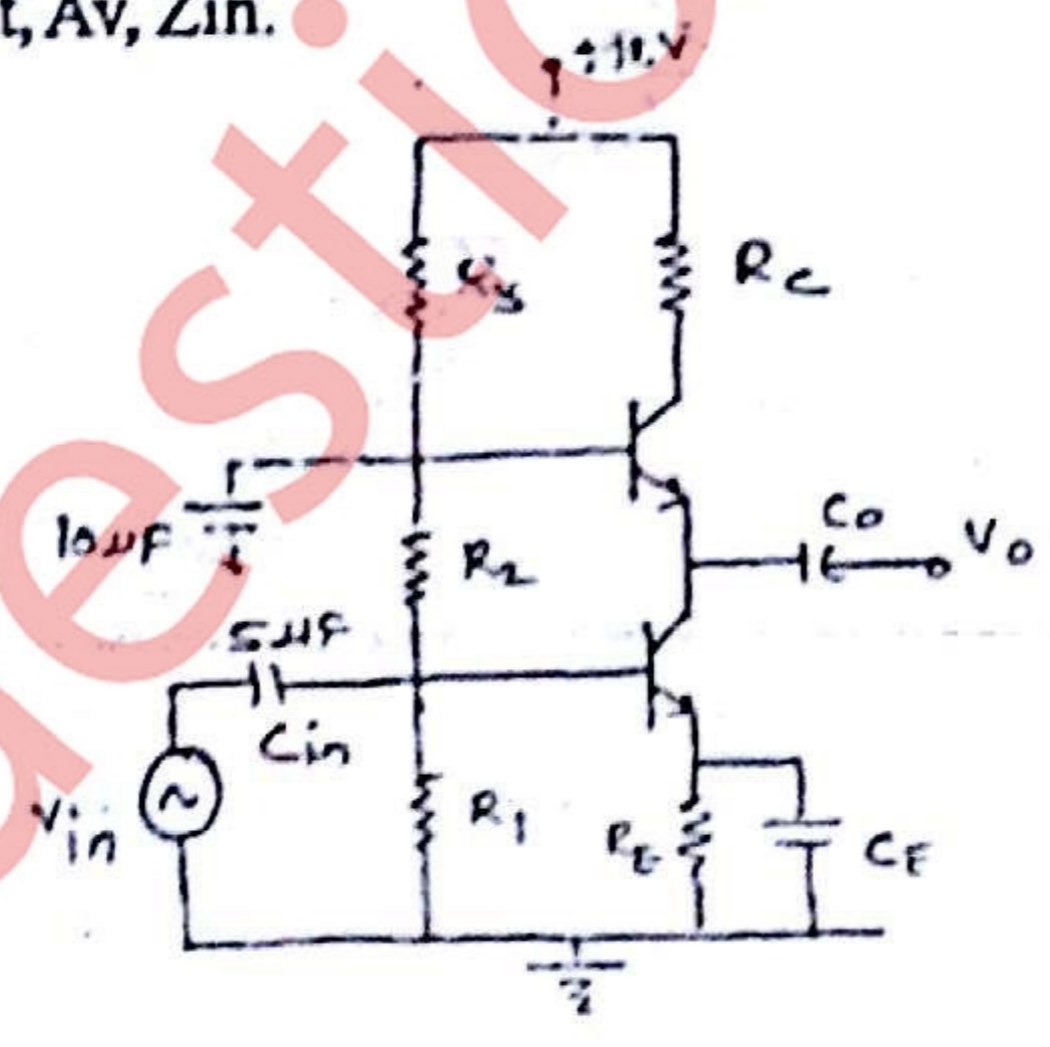
- $h_{ie} = 1 \text{ k} \Omega$                        $h_{fc} = 100$
- $R_1 = 47 \text{ k} \Omega$                          $R_2 = 10 \text{ k} \Omega$                        $R_C = 3.3 \text{ k} \Omega$
- $R_{E1} = R_{E2} = 470 \Omega$                        $R_C = 3.3 \text{ k} \Omega$



(b) Explain Enhancement MOSFET - characteristics, working, applications and biasing network. 10

6. (a) Calculate Q-point,  $A_v$ ,  $Z_{in}$ .

10



- $V_{BE} = 0.7 \text{ V}$                                        $R_3 = 6.8 \text{ k} \Omega$                                        $\beta = 100$
- $R_1 = 4.7 \text{ k} \Omega$                                        $R_E = 1.1 \text{ k} \Omega$
- $R_2 = 5.6 \text{ k} \Omega$                                        $R_C = 1.8 \text{ k} \Omega$

10

(b) Explain clippers circuit in series and parallel combination.