

(3 Hours)

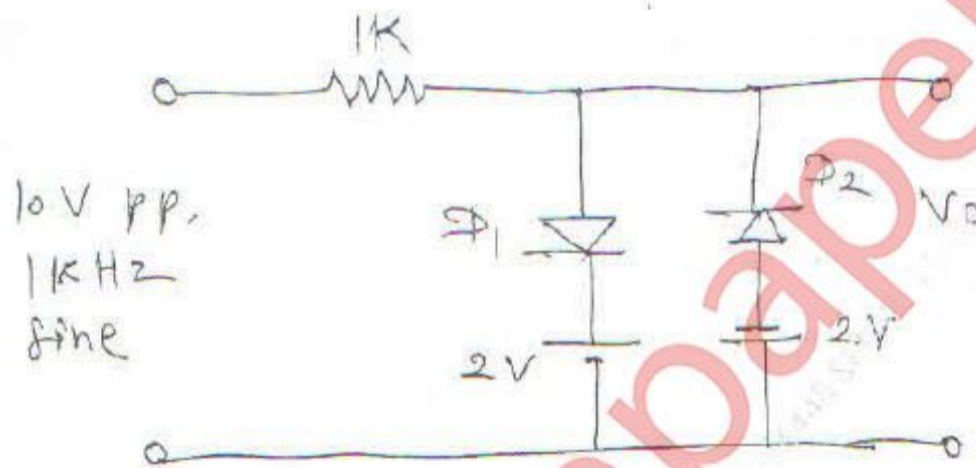
[ Total Marks : 80

- N.B. : (1) Question No. 1 is compulsory  
 (2) Solve **any three** from remaining questions.  
 (3) Assume suitable data if necessary.  
 (4) Draw neat and clean diagram

1. Solve any four.

(a) For the given circuit Draw output voltage waveform

5



(b) Design fixed bias JFET circuit for  $I_D = 3\text{mA}$ .  
 Assume  $I_{DSS} = 10\text{mA}$  &  $V_p = -6\text{V}$

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(c) Compare CS-CS Amplifier with CE-CE Amplifier

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(d) What are disadvantages of colpitt oscillator

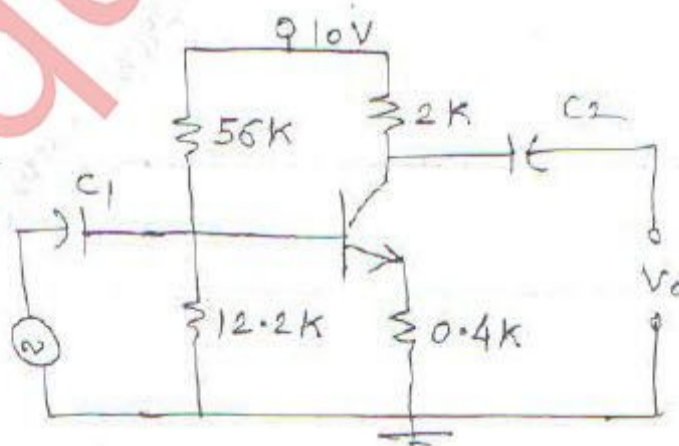
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(e) Explain any one technique to improve CMRR in differential amplifier.

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2. (a) For the given circuit find  $I_{CQ}$ ,  $V_{CEQ}$ ,  $V_C$  &  $V_E$ .

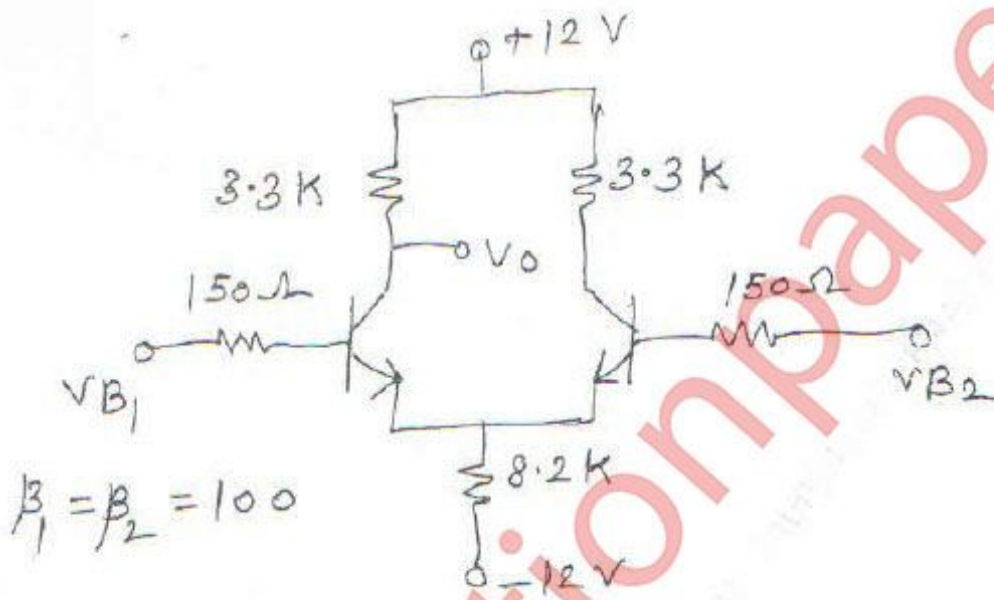
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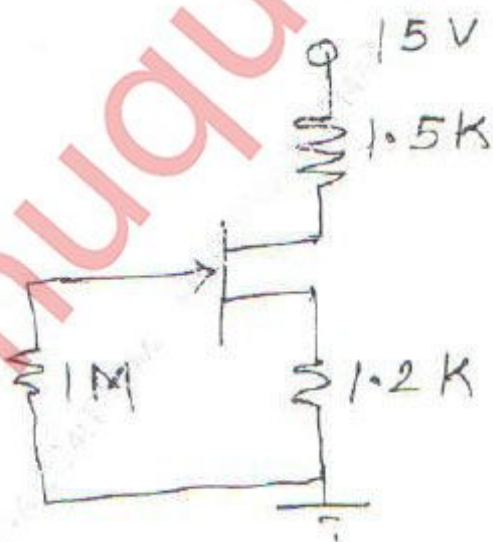
$\beta = 100, V_{BE} = 0.7\text{V}$

[TURN OVER]

2. (b) Derive equation of voltage gain, Input resistance and output resistance of voltage divider biased JFET amplifier. 10
3. (a) Explain High frequency response of JFET amplifier. 10
3. (b) Explain Wien bridge oscillator in brief. 10
4. (a) For the given differential amplifier, Calculate 10
- (i) Q-point ( $I_{CQ}$  and  $V_{CEQ}$ )
  - (ii) Differential Gain ( $A_d$ )



4. (b) For the given FET circuit find  $I_{DQ}$  and  $V_{DSQ}$  10



$I_{DSS} = 10 \text{ mA}$   
 $V_p = -4 \text{ V}$

5. (a) Explain class B power Amplifier in brief. 10  
(b) Explain CASCODE Amplifier with its applications. 10
6. Write short note on : 20  
(a) Voltage shunt feedback Amplifier.  
(b) Wilson Current Source  
(c) Darlington Amplifier  
(d) Difference between CB and CC Amplifier

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