QP CODE : 37283

[Time: 3 Hours] **[Marks: 80]**

Please check whether you have got the right question paper

N.B : 1. Question No.1 is **compulsory.**

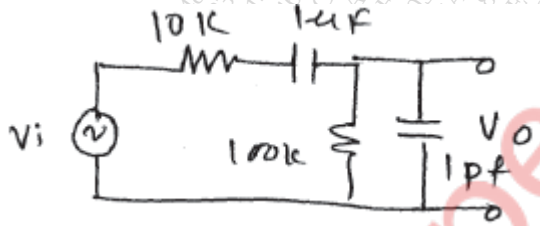
2. Attempt **any three** questions from remaining.

3. **All** questions carry **equal** marks.

4. Assume suitable data wherever necessary.

1. Attempt **any four** of the following

(a) Draw general frequency response of an amplifier. Determine corner frequencies for the following . **5**



(b) Compare MOSFET diffamp with passive load and active load. **5**

(c) Calculate max power dissipaton with and without heat sink. **5**

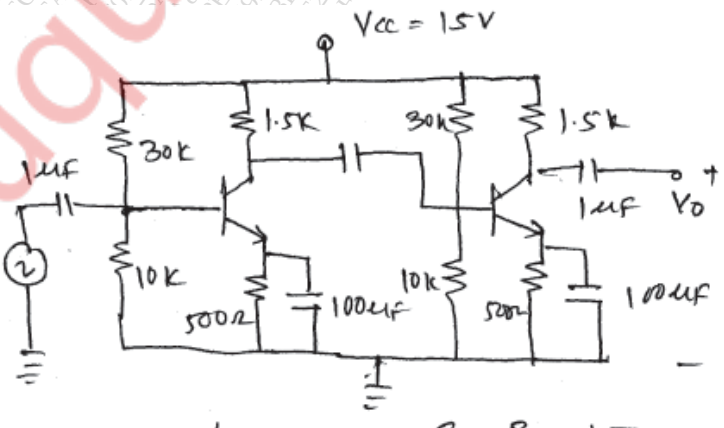
θjc = 1.5°C/W, θ_{CS} = 1° c/w, θ_{CA} = 50°C/W

θ_{JA} = 4°C/W, T_{jmax} = 100°C, T_{Amb} = 25°C

(d) State and explain Barkhausen criteria. **5**

(e) Explain working of SCR. Define I_L and I_H . **5**

2. (a) Determine voltage gain , i/p and o/p impedance for the two stage amplifier shown below. **10**



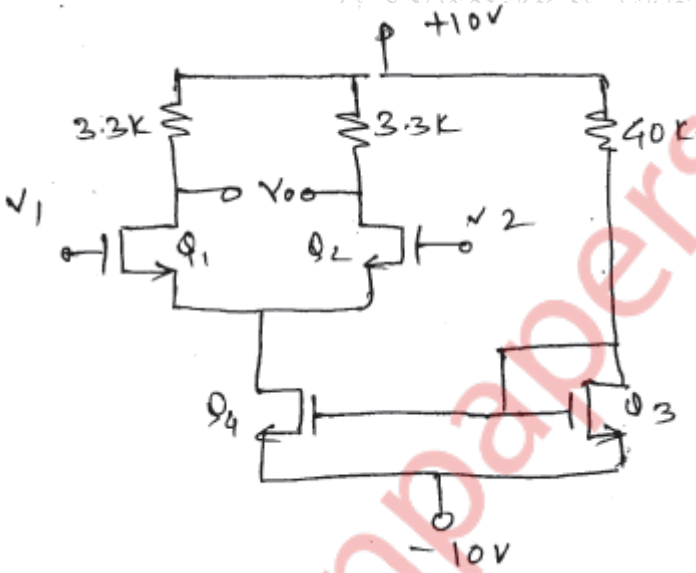
Assum $V_{BE} = 0.7V$, $\beta_1 = \beta_2 = 150$

(b) Explain working of RC phase shift oscillator. Give expression for frequency of oscillations. **10**

3. (a) Draw block diagram of voltage series negative feedback. Derive formulae for A_{vf}, R_{if}, R_{of}. **10**

(b) Explain working of UJT with the help of characteristics. Hence explain relaxation oscillator. **10**

4. (a) Determine I_{DQ} , V_{GSQ} and differential mode gain for following circuit. Assume Kn = 0.15 mA/v^2 , (VA) = 100 V VT = 1.5 V. **10**



(b) Draw circuit diagram of class A Transformer coupled amplifier. Explain working , Draw AC/DC load line. Derive expression of efficiency. **10**

5. (a) Explain high frequency response of CS-MOSFET amplifier with proper equation. Discuss effects of parasitic capacitances. **10**

(b) Explain use of constant current source in Diff amps. Give description of any one type. **10**

6. Solve **(Any Three)** **20**

(1) Cascode Amplifier working

(2) Gunn diode and it's applications

(3) Crossover distortion and methods to remove in class B amplifier

(4) Hartley oscillator.
