QP Code : 541900

(3 Hours) [Total Marks :80

N.B. : (1) Question Number One is compulsory
(2) Attempt Any Three of Remaining Five Questions
(3) Figure to right indicate full Marks
(4) Assume the suitable data if it is necessary

1. Answer **Any Four** of the following : 20
   (a) What is the thermal runaway in transistor? How it can be compensated
   (b) Give the working principle of Schottky diode with its applications.
   (c) Determine the operating point parameters V_{GSQ}, I_{DQ} and V_{DSQ} for the circuit shown below
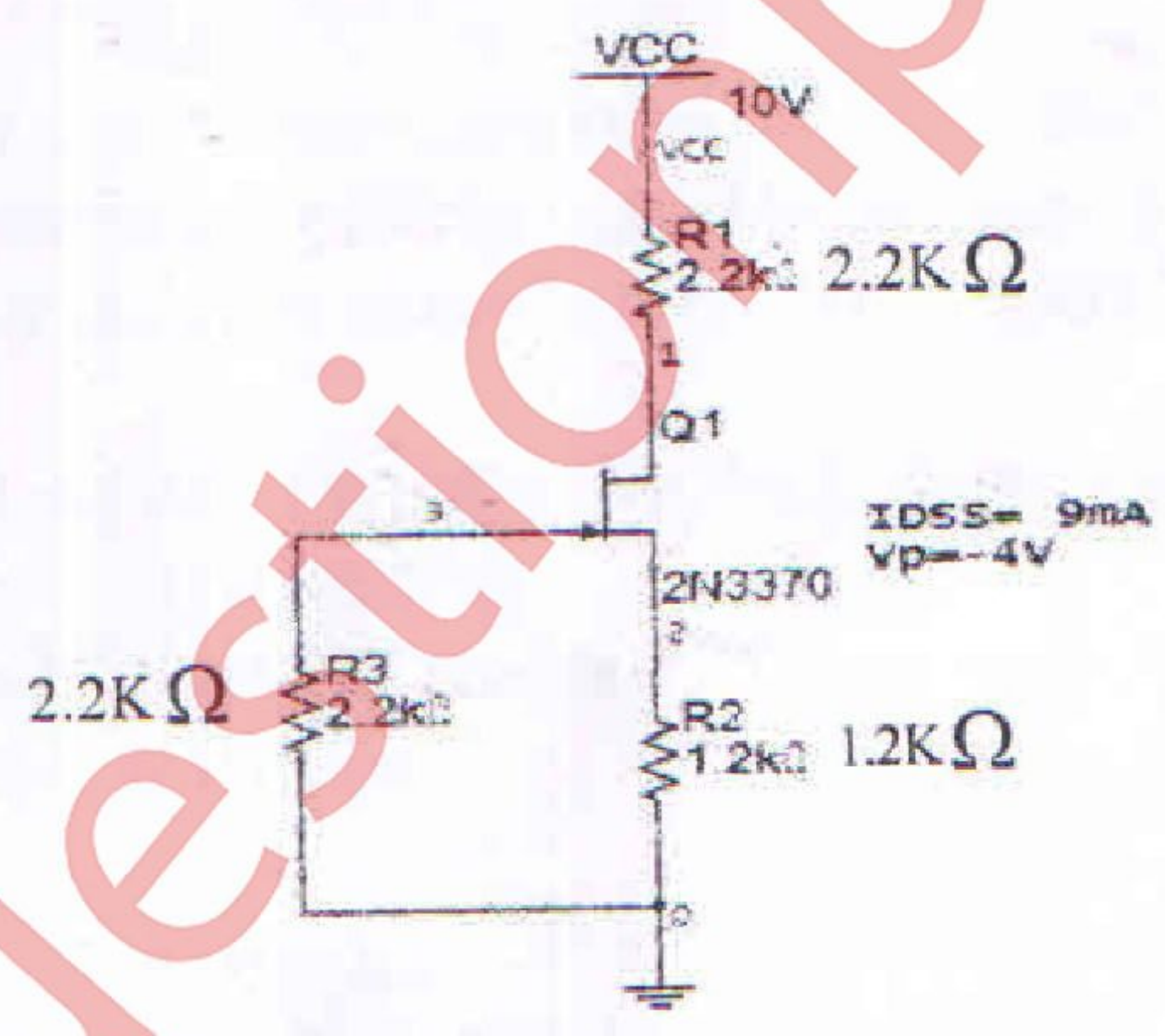
   (d) Explain the concept of Negative feedback with its advantages
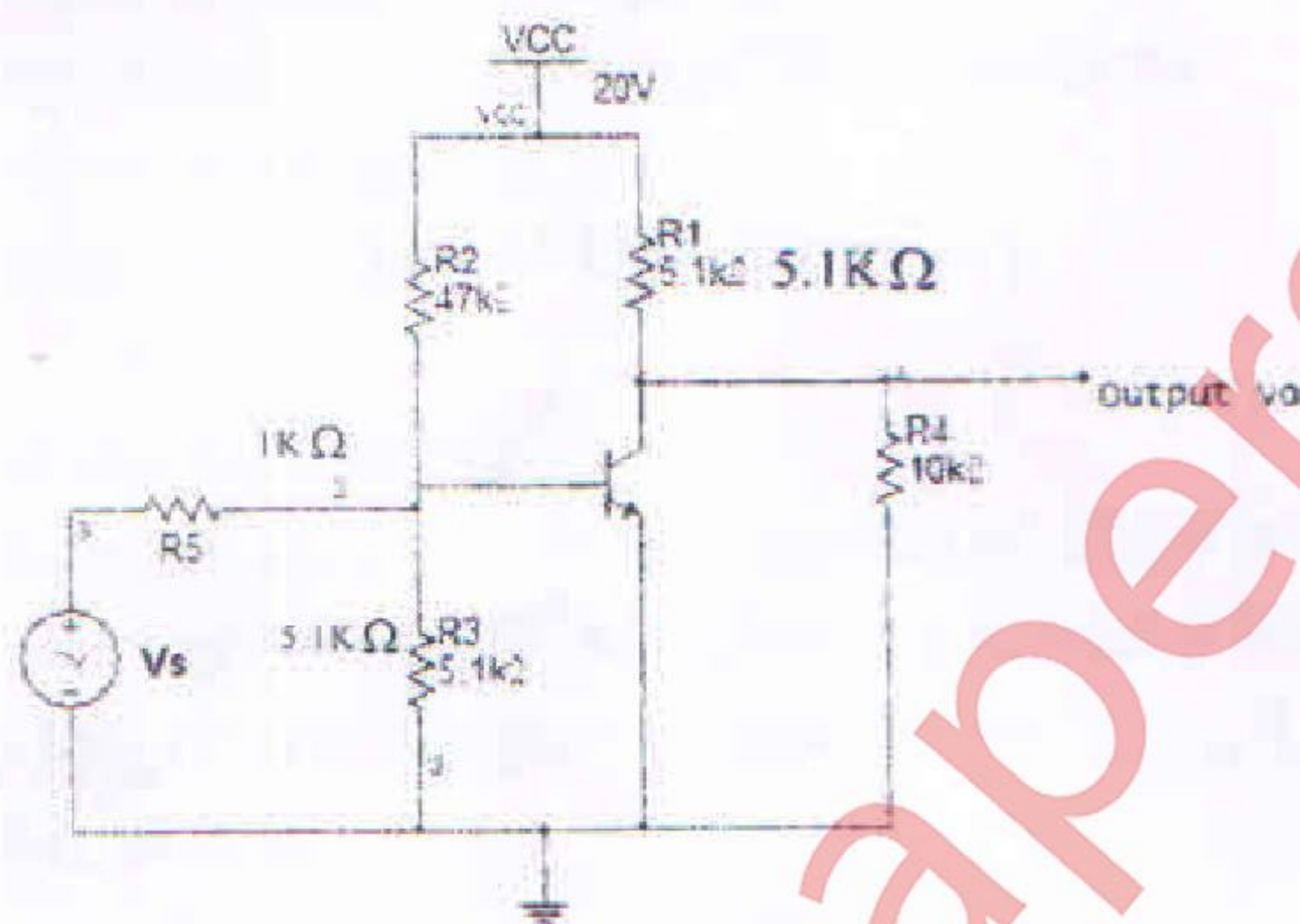   (e) Give the DC analysis of SISO differential amplifier using transistor

2. (a) Draw FWR with C filter and describe the circuit operation with waveform. Compare the performance of C, L, LC filters. 10

(b) For the transistor amplifier shown below with $h_{ie} = 1.5K\Omega$, $h_{fe} = 100$, $h_{re} = 3 \times 10^{-4}$, hoe= 25μ, calculate A_i, R_i, R_o and A_v. 10

3. (a) Compare the different negative feedback amplifiers. 10
   (b) With the working principle used in oscillators explain the Colpitt's Oscillator in detail with circuit diagram and equations. 10

4. (a) Give the different types of MOSFETs and explain any one with its construction and working 10
   (b) Give the DC and AC analysis of Dual Input Balanced output differential Amplifier. 10

5. (a) Explain the working of CE amplifier with its frequency response 10
   (b) Draw the circuit of Darlington emitter follower. Derive the expressions for its voltage gain, input impedance, output impedance and current gain. 10

6. Write a short note on **any two** of the following : 20
   (a) Explain FET as a Differential Amplifier
   (b) UJT Relaxation oscillator
   (c) H parameter model used in Transistor