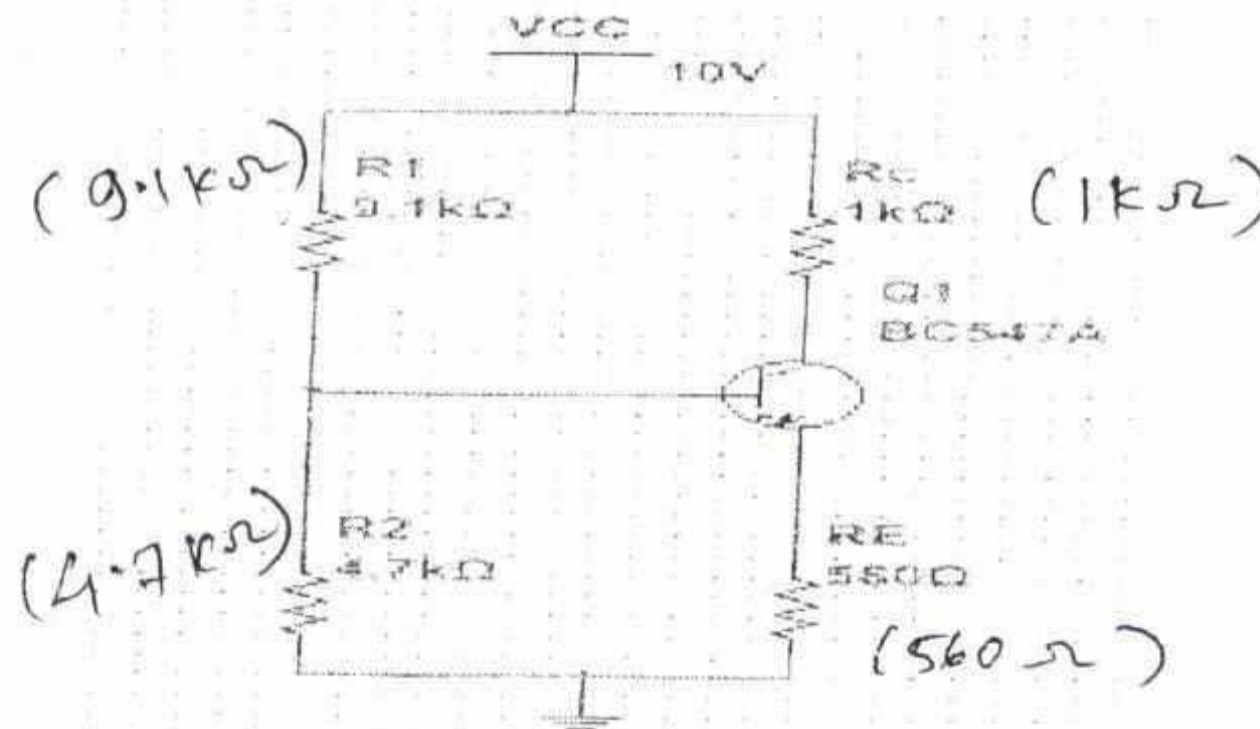


3 Hours

Instructions:

1. Question Number 1 is Compulsory
2. Attempt Any Three from the remaining 5 Questions
3. Figures to right indicate the full marks
4. Assume the suitable data if necessary.

- Que. 1 Answer Any FOUR of the following 20
- a Draw and explain the construction of Junction Field Effect Transistor
  - b Explain the VI characteristic of Schottky Diode and give the applications of it.
  - c Explain in brief the h-parameter model in BJT
  - d What is Darlington configuration? Why is it used in BJT?
  - e A Hartley Oscillator circuit having two individual inductors of 0.5mH each are designed to resonate in parallel with a variable capacitor used is of 100pF. Determine the frequency of oscillation
  - f State the advantages of negative feedback
- Que. 2 a State the various types of negative feedback amplifiers and compare these amplifiers in terms of block diagram, feedback gain, bandwidth, Noise, frequency distortion, stability and amplifier type 10
- b Explain the features of multistage RC coupled amplifier. Draw the neat circuit diagram of two stage R-C coupled transistor amplifier and also give its frequency response 10
- Que. 3 a State the Barkhausen's criteria used in oscillators and explain the R-C phase shift oscillator in detail 10
- b Give the comparison between C, LC and CLC ~~and CLC~~ filters that are used in rectifiers. 10
- Que. 4 a State the various biasing techniques used in BJT and calculate the values of  $I_{BQ}$ ,  $I_{CQ}$  and  $V_{CEQ}$  for the following circuit shown of Silicon transistor with  $\beta=100$  10



- b Draw and explain D-type MOSFET in detail with its input and output characteristics. 10
- Que. 5 a Give the complete AC analysis of CE amplifier using either h parameter model or re model. 10
- b Differentiate JFET and MOSFET in terms of symbol, construction, Input impedance, biasing methods used and also source and drain characteristics. 10
- Que 6 Write a short note on any two of the following 20
- a UJT relaxation oscillator
- b Thermal stabilization and compensation
- c Concept of DC load Line used in BJT

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