

II B.Tech II Semester Supplementary Examinations, January 2005
ELECTRONIC CIRCUITS

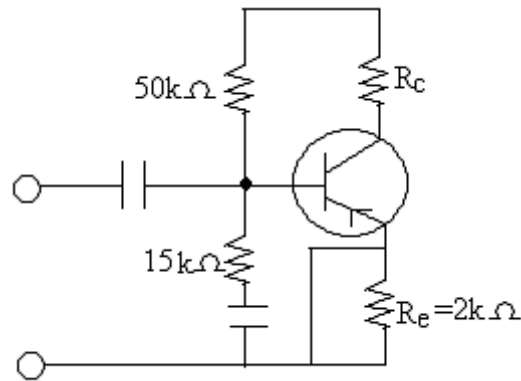
(Common to Electronics & Communication Engineering, Electronics &
Instrumentation Engineering, Bio-Medical Engineering, Electronics &
Control Engineering and Electronics & Telematics)

Time: 3 hours

Max Marks: 70

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain the need for bias stabilization in transistor circuits.
- (b) Draw self-bias transistor circuit and derive the expression for stability factor.
- (c) Determine the value of stability factor in the circuit shown below. Take $\alpha=0.98$.



2. (a) Explain why h-parameters are more useful in the analysis of transistor circuits as compared to z-parameters.
(b) Express common emitter h-parameters in terms of common base h-parameters.
3. (a) Draw the circuit of two stage R-C coupled transistor amplifier and explain the working of it.
(b) Draw the frequency response characteristics of the above amplifier and explain how bandwidth of the amplifier is determined from the characteristics.
4. (a) Explain alpha and beta cut-off frequencies as referred to high frequency transistor amplifier.
(b) Draw the circuit of high frequency single stage transistor amplifier and explain its working. Explain how the bandwidth of the above amplifier can be calculated.
5. (a) Draw the source self-bias circuit of JFET and explain the working of it.
(b) Draw the small-signal high-frequency circuit of a common source amplifier and derive the expression for voltage gain.
6. (a) Give the advantages and disadvantages of negative feedback in amplifiers. Show that the distortion is reduced with negative feedback.
(b) An amplifier has a gain of $480 + j\omega$. When negative feedback is applied, the gain reduces to $240 + j\omega$. Determine the feedback ratio.
7. (a) Classify oscillators.
(b) Draw the circuit of a crystal oscillator and explain its operation.
(c) With the help of a neat circuit diagram explain the working of Colpitts oscillator.
8. Write short notes on any THREE of the following:-
 - (a) Emitter follower
 - (b) Common source JFET amplifier
 - (c) Hartley oscillator
 - (d) R-C phase shift oscillator.
