$$V_{CE} = V_{CC} - I_C R_C$$

& Stability factor $\rightarrow S = 1 + \beta$

then $I_C = \beta I_B$

change in $\Delta I_C = ?$

& $S = 11 + \beta$

Q. Sketch the Gain frequency response curve of any RC coupled amplifier, marking cut-off frequencies and bandwidth. Explain why gain falls at high & low frequencies ?

Q. What is major drawback in collector to base or collector to feedback biasing method, & how is it avoided ?

Q. A C_E amplifier has a voltage source of internal resistance $r_s = 800\,\Omega$ and load impedance $R_L = 1000\,\Omega$. The h parameter of transistor are given as $h_{ie} = 11\,k\Omega$,

$$h_{fe} = 50, \quad h_{re} = 2\times10^{-4} \ \& \ h_{oe} = 25\,\mu A/v$$

Compute the A_P, R_P, A_V & R_o

Q. Draw & explain the circuit using diode compensation against thermal changes in V_{BE} & I_{CO}.

Q. Write short notes:
(i) Advantages of using h parameters.
(ii) Thermal Runaway.
(iii) Thermistor compensation for achieving transistor circuit stability.
(iv) Multistage Amplifier.

Q. Compare:
(i) Emitter follower circuit & Darlington Pair.
(ii) Hybrid π Model & h-parameter model for transistor analysis.

(iii) Cascade & Cascode Amplifier.

(Q) A si transistor has a fixed bias, neglecting leakage current I_{CBO}, if

$V_{CC} = 15V$, $R_B = 500 k\Omega$ & $R_C = 5k\Omega$

Find I_C & V_{CC} for $\beta = 50$. What will be the effect on working of transistor if $\beta = 101$?

Use formula $\Rightarrow I_B = \dfrac{V_{CC} - V_{BE}}{R_B}$, $I_C = \beta I_B$

Q What is important characteristics of Daulington Pair?

Q Compare imp characteristics of CE, CC & CB amplifier?

Q Show that gain Bandwidth product of RC coupled amplifier is constant? (3 m)

Q Draw circuit diagram of daulington pair amplifier and obtain its expression for current gain, input impedence & voltage gain?

Explain how MOSFET is used as resistance? (2)

Q Define ~~eggecge~~ r_d, g_m & μ. Define relation between them? (2)

Explain why current gain is not computed in FET amp? (2)

Draw low frequency & high freq model for MOSFET?

Draw circuit of CLASS B push pull amplifier?

Define intrinsic Stand-off ratio in UJT? (2) (2)

...components to ground.

Q Difference between DMOSFET & EMOSFET

Q Derive V-I equation for FET

Q Explain V-I characteristics curve of UJT

Q Draw circuit for commonly used CLASS A amplifier. If amplifier draws 10 W of dc power, what is max ac power available to load?

$$\text{Use} \quad \eta = \frac{P_{out}(ac)\,max}{P_{in}(dc)\,max}$$

(given) $\eta = 50\% \ \& \ P_{in}(dc\,max) = 10\,W$

The single ended Power amp. permits impedence matching & max efficiency is 50%.

Q Short note on : Tuned amp.
: Cross over distortion

Q (a) Classify amplifier based on feedback topology and give the block diagram?

(b) An amplifier has 60 dB gain & output impedance $Z_o = 10 k$. It is required to modify its output impedance to 500 by applying negative feedback. Calculate value of feedback factor, also find percentage change in overall gain, for 10% change in gain of gain of internal amplifier?

Use $Z_{of} = Z_o / (1 + A\beta)$

or

% change in overall gain of feedback amplifier

$$\frac{dA_f}{A_f} = \frac{1}{(1 + A\beta)} \cdot \frac{dA}{A} \times 100$$

Q. Explain with help

Q. What is th

Q. What is relation between thermal runaway rate and quiescent point?
Why the name DC load line?

Q. What is value of C_e in hybrid π model of CE transistor?

Q. Among all Power amplifiers, class C power amplifier has maximum efficiency but its use is restricted. Give reason?

Q. Why do we prefer to express gain in dB?

Q. What causes early effect in BJT?

Q. (a) Draw BJT fixed bias circuit & derive expression for stability factor.

(b) Prove that for CE transistor in active region

$$I_c = \beta I_B + (1+\beta) I_{co}$$

Q. Draw h-parameter equivalent circuit of CC, CE configuration & what are typical values of h-parameter for transistor in CE & CB configuration?

Q. Describe various coupling scheme for the stages of multistage amplifier?

Q. Derive General expression for stability factor S?

Q. What is thermal runaway?

Q. Short notes on:
(i) Effect of negative feedback on signal distortion of an amplifier.
(ii) Thyristor
(iii) Thermal stability of FET's.

Q. Compare: (i) TRIAC & DIAC
(ii) BJT & JFET
(iii) Shockley Diode & SCR
(iv) Positive & Negative feedback
(v) MOSFET & MESFET
(vi) Depletion & Enhancement type MOSFET.

(a) Describe various classification of Power Amplifiers based on their biasing?

(b) List out important applications of SCR.

Explain 4 types of feedback topologies with help of diagram?

What is the effect of negative feedback on bandwidth of an amplifier?

Which material are generally used for making LEDs?

Calculate gain, input impedence, output impedence of voltage series feedback amplifier

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having $A = 300$, $R_i = 1.5 \, k$, $R_o = 50K$ &

$$\beta = 1/2$$

Use

$$A_f = \frac{A}{(1 + A\beta)} \quad \text{for } -ve \text{ feedback amplifier}$$

$$R_{if} = R_i \, (1 + A\beta)$$

$$R_{of} = \frac{R_o}{1 + A\beta}$$