V. P. & R. P. T. P. SCIENCE COLLEGE - VALLABH VIDYANAGAR

3rd Semester S. Y. B. Sc. INTERNAL EXAMINATION

Subject: Physics Course: US03CPHY02

Date: 09/10/2014 Thursday Time: 2.00 to 3.30 pm Total Marks: 25

Q: 1 Answer the following Multiple Choice Questions with correct option. [3]

1. Normally, positive clipping of the output signal can be observed when the operating point on a load lane is established ..... region.
   (a) near saturation (b) near cut-off (c) at middle of active (d) in cut-off
2. The unit of transistor h-parameter h_{oe} is .....
   (a) ohm (b) mho (c) siemens (d) both (b) and (c)
3. For an amplifier, the negative feedback increases the ...
   (a) harmonic distortion (b) noise (c) gain (d) bandwidth

Q-2 Answer Any Two of the following short questions. (Each of 2 Marks) [4]

1. What is thermal run away of the transistor? Explain.
2. Draw ac equivalent circuit of a transistor and label its components.
3. What is a Emitter follower circuit? Draw it and state its features.

Q.3 What is a Fixed bias circuit? With a suitable example explain how operating point of a Fixed bias circuit is determined. [6]

OR

Q.3 What is Voltage divider biasing circuit? Explain determination of operating point of such circuit using accurate analysis with suitable example. [6]

Q.4 What are small signal amplifiers? Draw the circuit of such amplifier and discuss function of each component. Define gain of such amplifier. [6]

OR

Q.4 What are h parameters? Explain development of h-parameter equivalent circuit of a CE transistor. [6]

Q.5 Define feedback. Explain various types of feedback and derive expression for voltage gain of a series voltage negative feedback amplifier. [6]

OR

Q.5 Why negative feedback is preferred over positive feedback? Explain effect of negative feedback on (i) gain (ii) input impedance and (iii) output impedance of an amplifier. [6]

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