V. P. & R. P. T. P. SCIENCE COLLEGE
VALLABH VIDYANAGAR
S.Y. B. Sc. THIRD SEMESTER

PHYSICS US03CPHY02 Internal test Marks 25

Basic Solid State Electronics

Date: 01/10/2016 Saturday Time: 3.00 to 4.30 p.m.

Q:1 Multiple Choice Questions: 03

1. The potential divider method of biasing is used in amplifier to
   (a) Limit the ac signal going to the base
   (b) Make the operating point almost independent of β
   (c) Reduce the dc base current
   (d) Reduce the temperature independent.
2. The h-parameter h_{ie} defines _____of a CE transistor.
   (a) output impedance (b) input impedance (c) forward current gain
   (d) reverse voltage gain.
3. Two identical stages of amplifiers are cascaded by RC –coupling.If the voltage gain of each stage is 10, ,the overall gain of the cascaded amplifier in dB will be ....
   (a)40 dB (b) 20 dB (c) 100 dB (d) 400 dB.

Q;2 Short Questions:(any two) 04

1. Draw the circuit diagram of fixed bias circuit and state its limitations.
2. Draw ac equivalent circuit of a transistor and label its components.
3. Calculate the gain of a negative feedback amplifier with an internal gain A=100, and feedback factor β =1/10.

Q:3 What is Voltage divider biasing circuit? Explain determination of operating point of such circuit using accurate analysis. 06

OR

Q:3 Write note on collector to base biasing circuit. 06

Q:4 Write note on: h- parameters. 06

OR

Q:4 For a small signal amplifier explain DC and AC load lines. Discuss calculation of gain and phase relations. 06

Q:5 Explain how the negative feedback in an amplifier helps to 06
   (i) stabilize the gain and
   (ii) increase input impedance

OR

Q:5 Explain how the negative feedback in an amplifier helps to 06
   (i) decrease output impedance and
   (ii) increase bandwidth