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

PHYSICS US03CPHY02 **Internal test** **Marks 25**
Date: 03/10/2015 Saturday **Time: 3.00 to4.30 p.m.**

Q:1 Multiple Choice Questions: [3]

1. The Q point in a voltage amplifier is selected in the middle of the active region mainly because
   (i) the operating point become very stable(ii) it gives distorationless output (iii)the circuit then requires less number of resistors(iv)it then requires less dc voltage.
2. The h-parameter h_{ie} defines _____of a CE transistor.
   (i) output impedance (ii) input impedance (iii) forward current gain (iv) reverse voltage gain.
3. With negative feedback bandwidth of the amplifier
   (i) becomes infinite (ii) decreases (iii) increases (iv) remains constant

Q:2 Short Questions:(any two) [4]

1. Draw the collector to base bias circuit and state its features.
2. Draw the circuit of small signal amplifier and label each component.
3. Calculate the gain of a negative feedback amplifier with an internal gain $A = 100$ and feedback factor $\beta = 0.15$.

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

OR

Q:3 What is a Fixed bias circuit? Explain determination of its operating point with suitable example. [6]

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

OR

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

Q:5 Discuss voltage gain of feedback amplifier and derive expression for its gain (A_f) in terms of internal gain (A) of amplifier. [6]

OR

Q:5 Explain effect of negative feedback on (i) stability of gain (ii) input impedance of an amplifier. [6]