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RN-8203

B. E. - II (Sem. IV) (Electronics) Examination

May / June – 2010

Advance Electronics

(GTU)

Time : Hours] [Total Marks :

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - 2 (Sem. 4) (Electronics)**

Name of the Subject :

☛ **Advance Electronics (GTU)**

☛ Subject Code No. : **8 2 0 3** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Figures to the right indicate full marks.
(3) Assume suitable data if necessary.
(4) Write each section in different answer book.
(5) Attempt all questions.

SECTION - I

1 Answer the following questions : **20**

(i) Give names of various types of logic families.
(ii) What is band-width modulation?
(iii) What is the significance of hybrid parameters?
(iv) What is the purpose of bypass capacitor in an amplifier?
(v) Give applications of oscillators.
(vi) What is the use of Bode Plot?
(vii) Give names of different types of compensations used in operational amplifiers.
(viii) Draw circuit diagram of TTL family.
(ix) Write the truth table for EX-NOR gate.
(x) What is the value of CMRR in an ideal operational amplifier.

2 (a) Describe Hybrid -pi CE Transistor Model. **8**

(b) Explain low Frequency Response of an RC coupled stage and effect of an Emitter Bypass Capacitor on Low-frequency Response. **7**

OR

2 (a) Give comparison of currunt shunt feedback and voltage shunt feedback. 8

(b) Explain the method of analysis of a feedback amplifier. 7

3 (a) Explain three-pole transfer function with feedback. 8

(b) Write short note on Resonant Circuit Oscillators. 7

OR

3 (a) Write short note on Phase-Shift Oscillator. 7

(b) Explain single-stage CE transistor amplifier response. 8

SECTION - II

4 (a) Define the following : 10

(i) Slew rate

(ii) Sensitivity

(iii) Fan in

(iv) Noise margin

(v) Propogation delay

(vi) Power dissipation

(vii) i/p offset voltage

(viii) Advantages of -ve feedback

(ix) Figure of merit

(x) O/P offset voltage

(b) Explain pole-zero compensation. 2

(c) Prove Densitivity = 1 + AB 3

OR

(c) Find the o/p impedance equation for voltage series –ve feedback amplifier. 3

(d) True/False : 5

(i) Equation of sensitivity is 1/1+AB.

(ii) –ve feedback will increase the bandwidth.

(iii) DCTL is more useful than RTL.

(iv) For voltage series -ve feedback amplifier the feedback signal is voltage.

(v) R/Zr ladder type is faster than binary weighted resistor type.

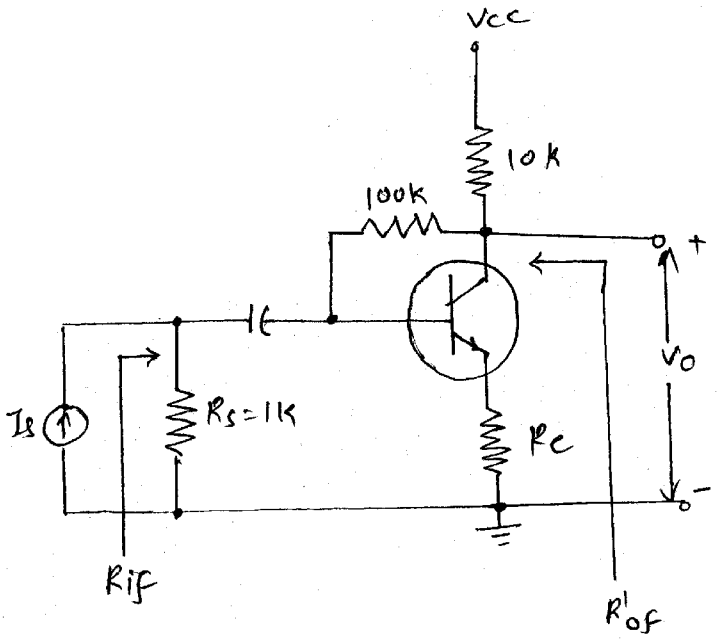
5 (a) For the transistor feedback amplifier stage shown, 12
h_{fe}=100, h_{ie} = 1k while h_{re} and h_{oe} are negligible. Determine with R_e = 0.

(a) $R_{Mf} = \frac{V_o}{I_S}$ where $I_s = \frac{V_s}{R_s}$

(b) $A_{Vf} = \frac{V_o}{V_s}$

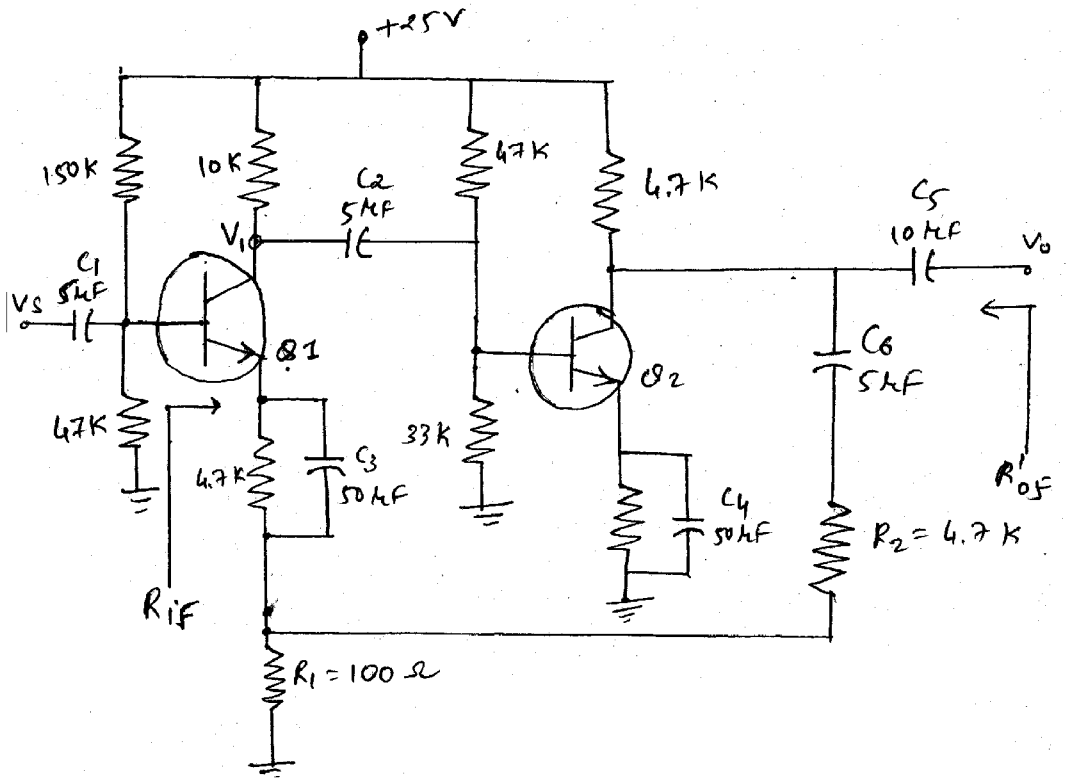
(c) R_{if}

(d) R'_{of}



OR

Calculate A_{vf}, R_{of} and R_{if} for the amplifier of below fig. Assume R_s = 0, H_{fe} = 50, h_{ie} = 1.1 k, h_{re} = h_{oe} = 0 and identical transistors.



(b) Derive the i/p impedance equation for voltage series -ve feedback. **3**

6 Attempt any **three** : **15**

(i) Explain R/2R ladder type

(ii) Explain TTL gate in detail

(iii) Block diagram of -ve feedback amplifier and explain each block in detail.

(iv) The op-amp is used in the inverting and non-inverting mode with R_1 = 1 kΩ and R_f = 100 kΩ if V_{ce} = ± 15 V and rms input voltage V_i = 20 mv. Calculate the o/p voltage in each case.