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RM-6541

B. E. II (Sem. IV) (IT) Examination

April / May – 2010

Electronics - II

Time : Hours] [Total Marks : **100**

Instruction :

(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) (IT)**

Name of the Subject :

☛ **Electronics - 2**

☛Subject Code No. : **6 5 4 1** ☛Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Figures to the **right** indicate full marks.
(3) Assume **necessary** data wherever **necessary**.
(4) Draw neat and clean circuit diagrams.

SECTION - I

1 (a) Fill in the blanks. **10**

(i) Transfer function for voltage series is _____.
(ii) Efficiency of class-B push-pull power amplifier is _____.
(iii) Distortion with negative feedback_____.
(iv) Desensitivity D for voltage shunt is expressed as _____.
(v) Input impedance of current shunt amplifier with feedback_____.
(vi) 7912 IC gives us _____ as output voltage.
(vii) Efficiency of class A transformer coupled power amplifier is _____.
(viii) 79xx ICS are _____voltage regulator.
(ix) Figure of merit defined as _____.
(x) Distortion with -ve Feedback_____.

(b) Plot the output waveforms of class A, B and C power amplifier. Write your comments regarding waveforms. **4**

(c) A transformer coupled class-A power amplifier draws a current of 200 MA from a collector supply of 10 V. when no signal is applied to it. Determine **6**

(i) Maximum output power
(ii) Maximum collector efficiency
(iii) Power rating of the transistor.

2 (a) Derive the expression for current series amplifier for its gain, input impedance and output impedance with feedback. **8**

(b) Find the topology for the circuit shown in **fig. 1**. Also find out ac. voltage v_i as a function of v_s and v_f. Assume that the inverting amplifier input resistance is infinite and **8**
$A = A_v = -1000$, $B = Vf/Vj = 1/100$, $R_S = R_C = R_C = 1k$, $h_{fe} = 100$. Also find $A_{vf} = V_o/V_s$.

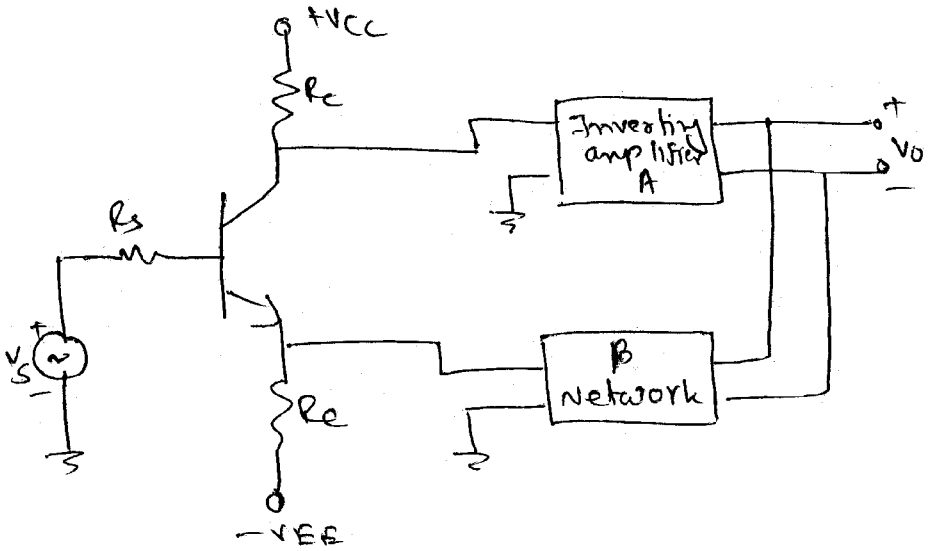

Fig. 1

OR

2 (a) Explain the basic block diagram of feedback amplifier. Also, list steps to recognize the type of topology of given feedback amplifier. **8**

(b) The transistor in the feedback amplifier shown in **figure 2** are identical having $h_{ie} = 1.1$ k.v $h_{fe} = 50$. Calculate (i) A_{if} (ii) A_{vf} (iii) R_{if} and (iv) R_{of} **8**

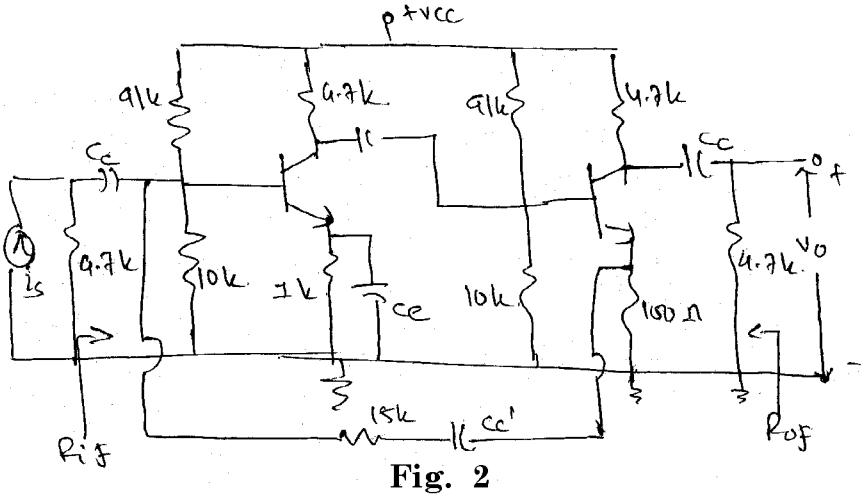

Fig. 2

3 Attempt any **three** : **15**

(a) Explain following related to voltage regulation
(i) Line regulation (ii) load regulation
(iii) Ripple rejection.

(b) Explain the design of a low voltage regulator using 7C 723.

(c) Explain foldback current limiting.

(d) Design a currrent source using 7805 regulator.

SECTION - II

4 (a) Do as directed :
(i) Define : Slew rate, PSRR.
(ii) Explain virtual ground concept in an op-amp.
(iii) Define : line regulation, load regulation
(iv) Draw the 555 timer functional block diagram.
(v) Applications of 555 timer.

(b) Explain voltage series feedback amplifier. **8**

OR

(b) Draw the ckt. diagram for integrator and explain the same. **8**

5 (a) Draw the ckt diagram for the instrumentation amplifier and explain the same. **8**

OR

(a) Explain the first order high pass butterworth filters. **8**

(b) Explain the working of monostable multivibrator using op-amp and obtain the expression for the output pulse width and recovery time. **8**

OR

(b) Explain RC phase shift oscillator. **8**

6 Attempt any **two** : **16**

(i) Phase locked loop
(ii) Triangular wave generator
(iii) SMPS
(iv) Protection circuitry for voltage regulators.