B-Tech SEM-IV Biomedical (2014 Course) CBCS : SUMMER-2019

SUBJECT: ELECTRONIC CIRCUITS AND APPLICATIONS

Day: Saturday
Date: 25-05-2019

Time: 10:00AM TO 1:00PM
Max Marks. 60

S-2019-2613-A

N.B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw neat diagrams **WHEREVER** necessary.
4) Use of scientific calculator is **ALLOWED**.

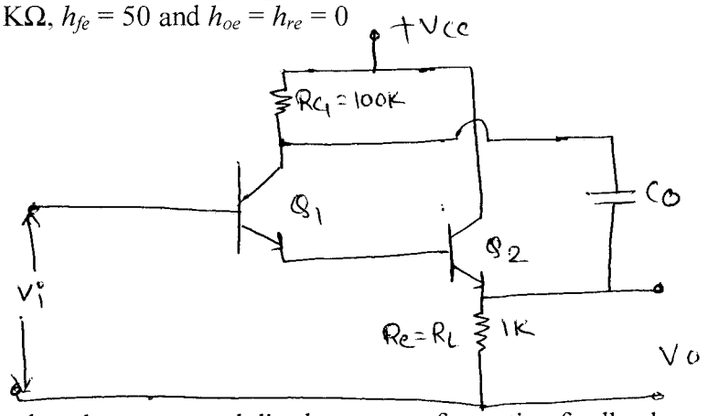
Q.1 Write short note on : **(10)**

i) Effect of cascading on overall gain and bandwidth in multistage amplifiers.

ii) Choice of transistor configuration in cascade amplifier.

OR

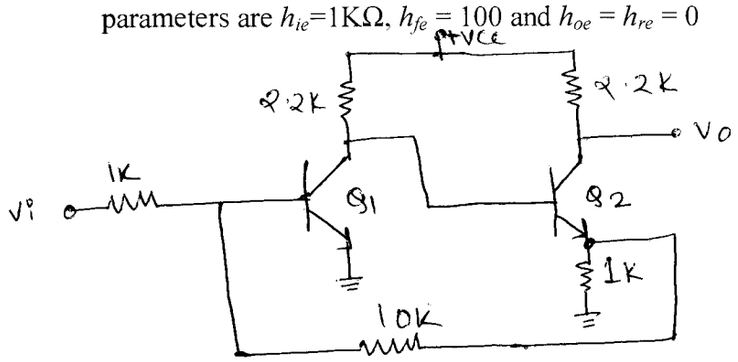
Q.1 For the circuit shown in the figure calculate R_i, A_i, A_v for each stage and also calculate overall voltage gain. Both transistors are identical having h_{ie}=1.1KΩ, h_{fe} = 50 and $h_{oe} = h_{re} = 0$ **(10)**



Q.2 Discuss the advantages and disadvantages of negative feedback. **(10)**

OR

Q.2 For the Circuit shown in the figure calculate A_{vf}, R_{if}, and R_{of}. Transistor parameters are h_{ie}=1KΩ, h_{fe} = 100 and $h_{oe} = h_{re} = 0$ **(10)**



Q.3 What are the different distortions those occur in an AF power amplifier? Describe how even harmonics get eliminated in Class A push pull amplifier. **(10)**

OR

Q.3 **a)** What is thermal resistance? Describe the thermal electrical analogy related to a transistor with heat sink. **(05)**

b) What is heat sink? What is its function? **(05)**

P.T.O.

Q.4 Describe the working of Wien bridge oscillator with the help of circuit diagram. Derive the expression for its frequency of oscillation. **(10)**

OR

Q.4 A quartz crystal has the following constants, L = 50mH, C_1 = 0.02pF, R = 500Ω and C_2 = 12pF. Find the values of f_s and f_p . If the external capacitance across the crystal changes form 5 pF to 6pF, find the change in frequency of oscillations. **(10)**

Q.5 What are the different performance factors of a regulator? Define. **(10)**

OR

Q.5 Draw and design a series transistor voltage regulator circuit to provide output of 15V for a maximum load current of 2A, when the input voltage variation is 20 to 23V and transistor gain is 50. **(10)**

Q.6 Draw hybrid-π equivalent circuit of a high frequency BJT. Describe the significance of each component in the equivalent circuit. **(10)**

OR

Q.6 A common emitter single stage HF amplifier uses a resistive load R_L. Using the hybrid π equivalent circuit derive an expression for current gain at high frequency. **(10)**

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