S-E-Sem III (CBGS). 14/5/15

EXTC

Analog Electronics II

QP Code : 4887

(3 Hours) **[Total Marks : 80**

N.B (1) Question Nos. 1 is compulsory.

(2) Attempt any three questions from the remaining five questions.

(3) Figure to the right indicates full marks.

(4) Assume suitable data whenever necessary but justify the same.

1 (a) Compare clipper and clamper circuit. [5]

(b) Explain Barkhausen criteria for sustained oscillations. [5]

(c) Compare Depletion and Enhancement type MOSFET. [5]

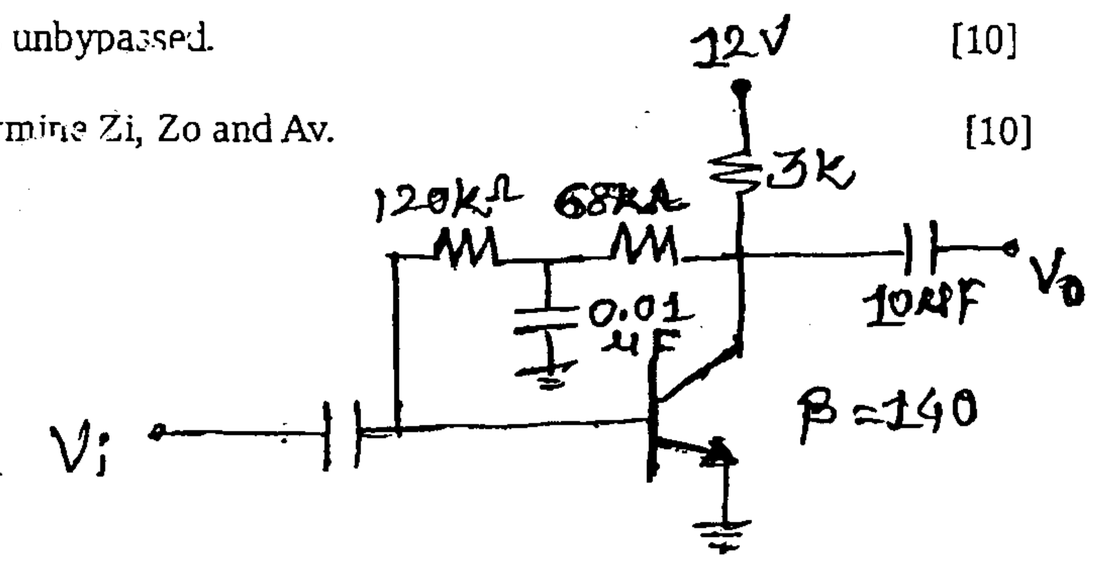
(d) Transistor is a current controlled device while FET is a voltage controlled device. Justify. [5]

Q2 (a) Define Stability factor. Derive the equation for Stability factor. State which biasing technique is more stable. Justify your answer. [10]

(b) For a NPN transistor in CE mode voltage divider bias configuration determine V_C and V_B. Given V_{CC} = +20V, V_{EE}= -20V, R_1 =8.2KΩ, R_2 = 2.2KΩ, Rc = 2.7KΩ, R_E = 1.8 KΩ, C_1=C_2= 10μF and β = 120. [10]

Q3 (a) Derive the equations for Av, Ai, Ri and Ro for a NPN transistor in CE mode voltage divider bias configuration with RE unbypassed. [10]

(b) For the network given below determine Zi, Zo and Av. [10]



Q4 (a) Explain the basic operation and characteristics of n-channel enhancement type MOSFET. [10]

(b) Draw a neat circuit diagram of Wien bridge oscillator and derive an expression for its output frequency. [10]

JP-Con. 8919-15.

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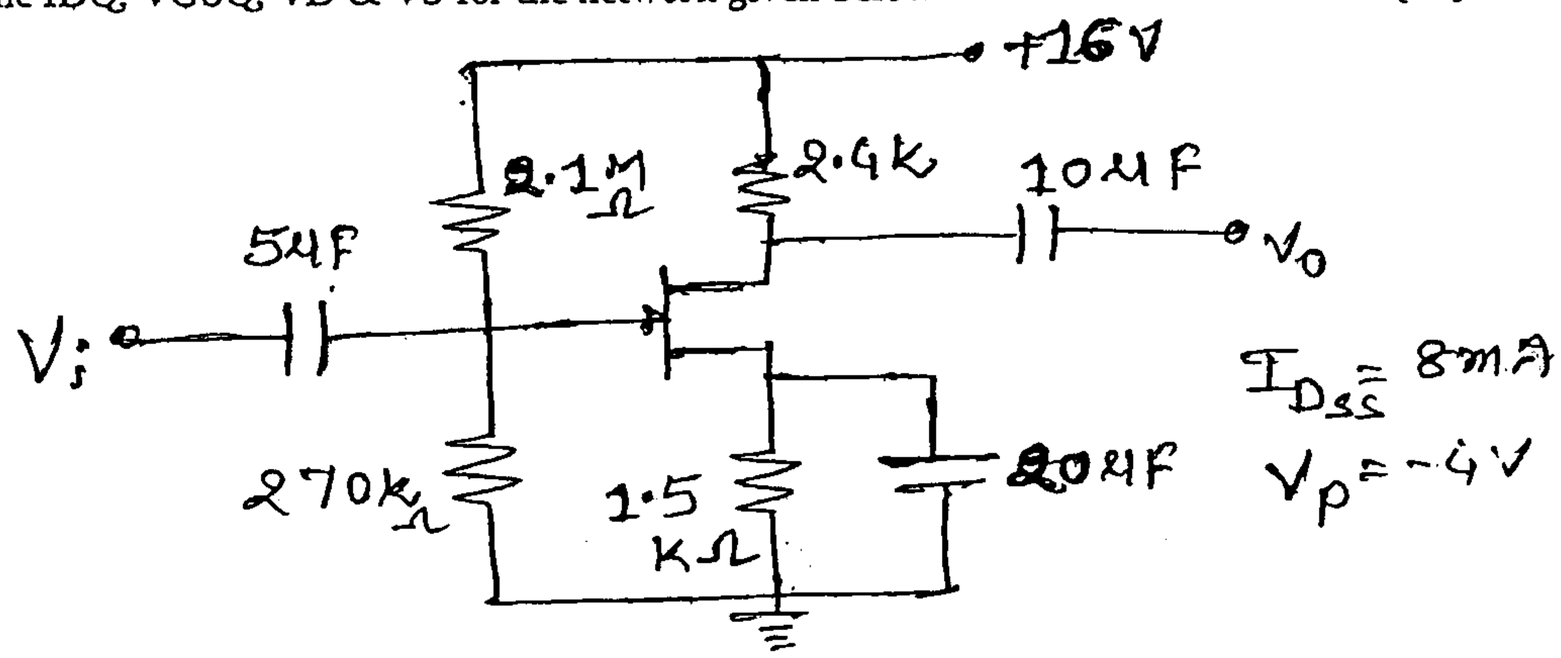
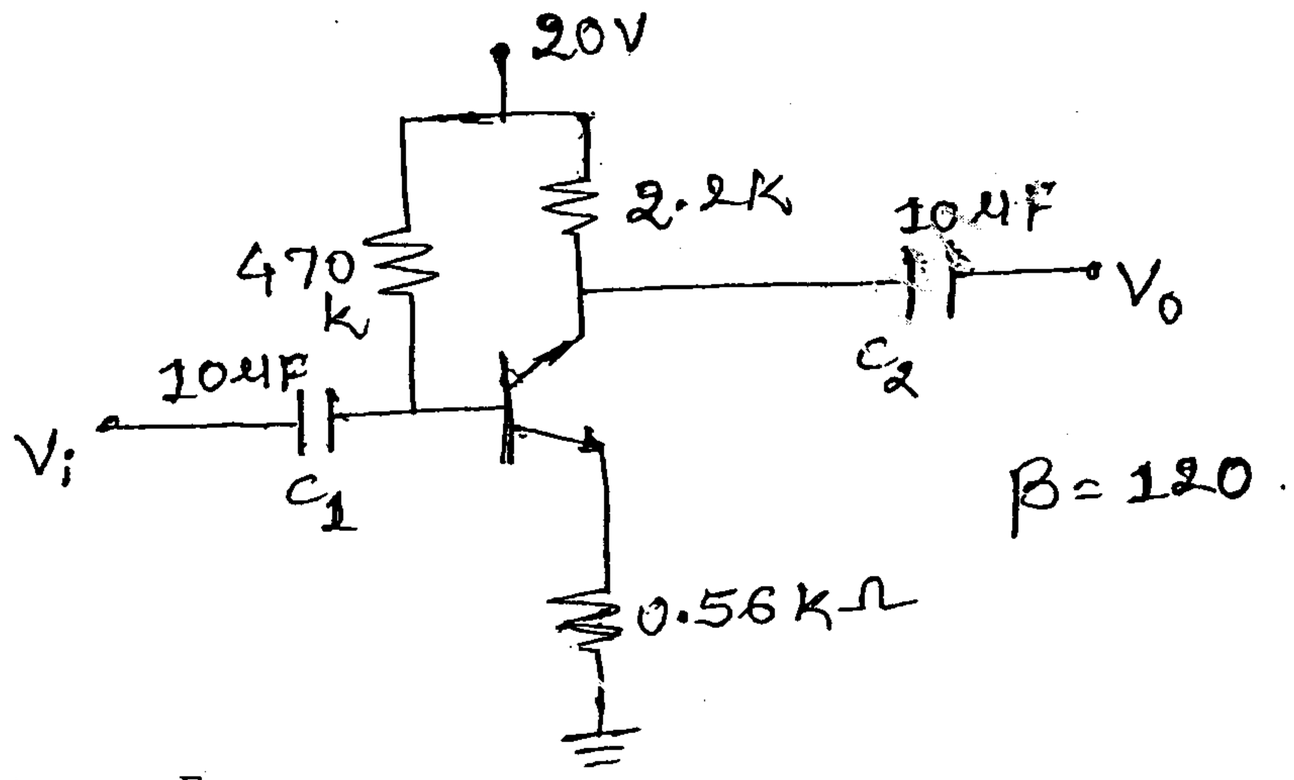
Q5.) a) Determine IDQ, VGSQ, VD & VS for the network given below: [10]



b) Determine Zi, Zo & Av for the circuit given below. [10]



Q6. Write short note on any Four:- [20]

i) Biasing of JFET for Zero temperature drift.

ii) Energy band diagram of MOS capacitor.

iii) Small signal equivalent circuit of CC amplifier.

iv) Crystal oscillator

v) DC load line & significance of Q point.