Munish Sood

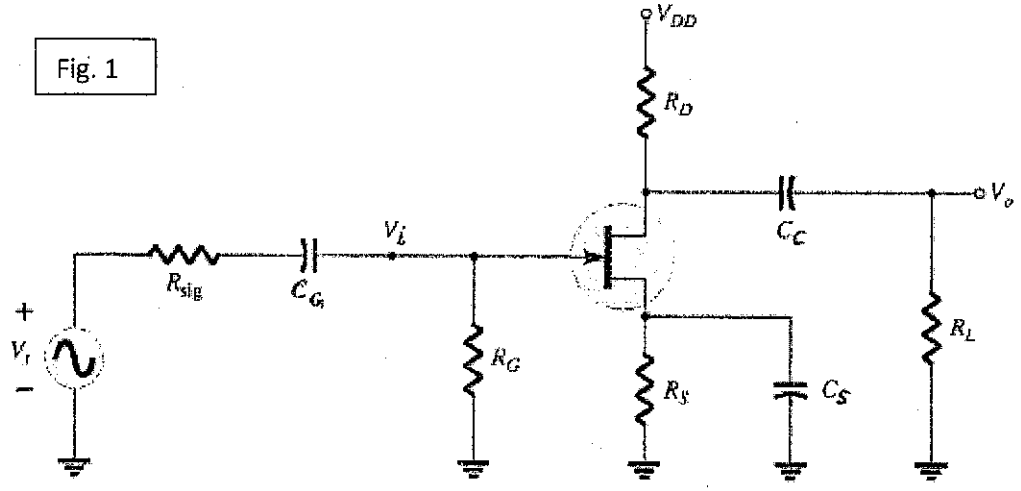
JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION- Dec 2018
B.Tech III Semester

COURSE CODE: 10B11EC312 MAX. MARKS: 35
COURSE NAME: Analog Electronics
COURSE CREDITS: 3 MAX. TIME: 2 Hrs

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

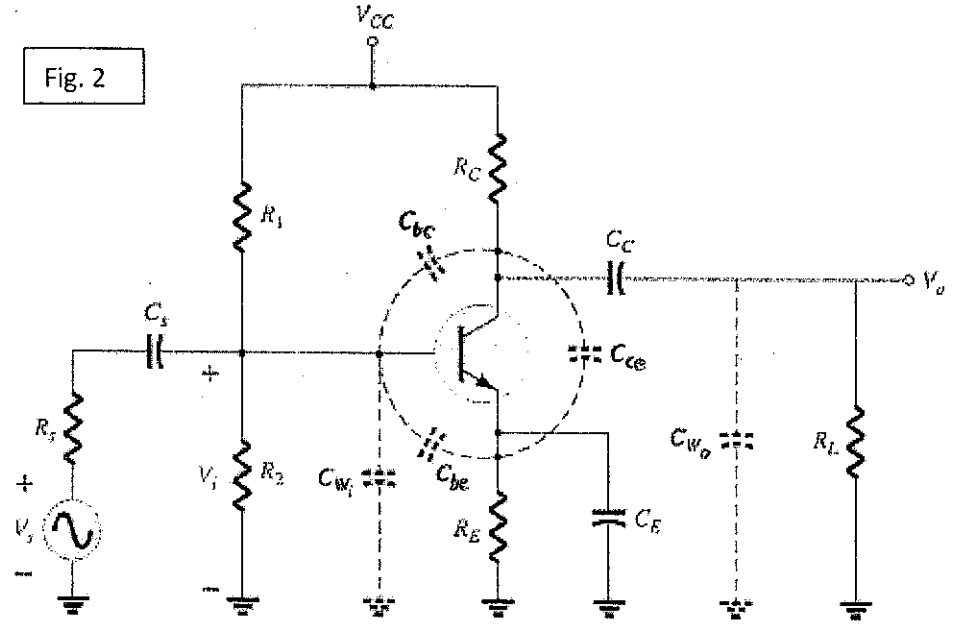
Q1) Determine the lower cut off frequency for the network of following Fig.1. C_G=0.01μF, C_C = 0.5μF, C_S = 2μF, R_{SIG}= 10 KΩ, R_G = 1MΩ, R_D = 4.7 kΩ, R_S = 1 kΩ, R_L = 2.2 k Ω, I_{DSS}= 8 mA V_P = - 4V, r_d = ∞ Ω, V_{DD} = 20 V **(5)**

Fig. 1



Q2) Determine the upper cut off frequency f_{Hi} and f_{Ho} for the network of Fig. 2. With R_S = 1 kΩ, R_1 = 40 kΩ, R_2 = 10 kΩ, R_E = 2 kΩ, R_C = 4kΩ, R_L = 2.2 kΩ, β = 100, r_o = ∞, V_{CC} = 20 V. C_{be} = 36 Pf, C_{bc}= 4 PF, C_{ce}= 1 Pf, C_{Wi} = 6PF, C_{Wo} = 8pF. **(5)**

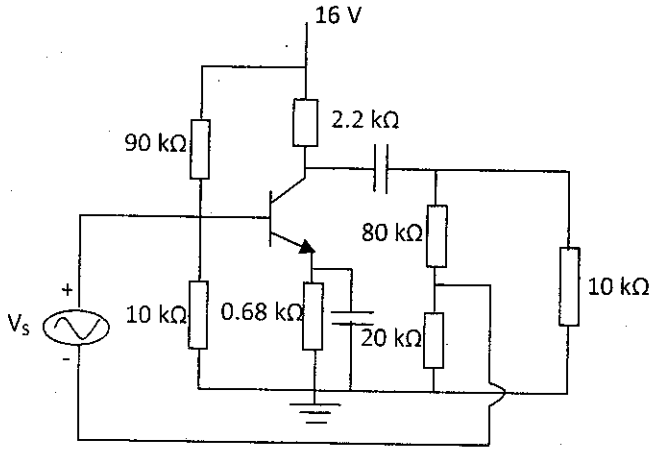
Fig. 2



Q3) What is Barkhousen criteria for oscillators ? Derive the expression for frequency of oscillation for RC phase shift oscillator. **(5)**

Q4) Calculate the gain without and with feedback for the network of Fig. 3.(Using voltage series feedback) with β = 210 and ro= 50 kΩ **(5)**

Fig. 3



Q5) Calculate the no load voltage gain for the cascode configuration of Fig.4 **(5)**

Fig. 4

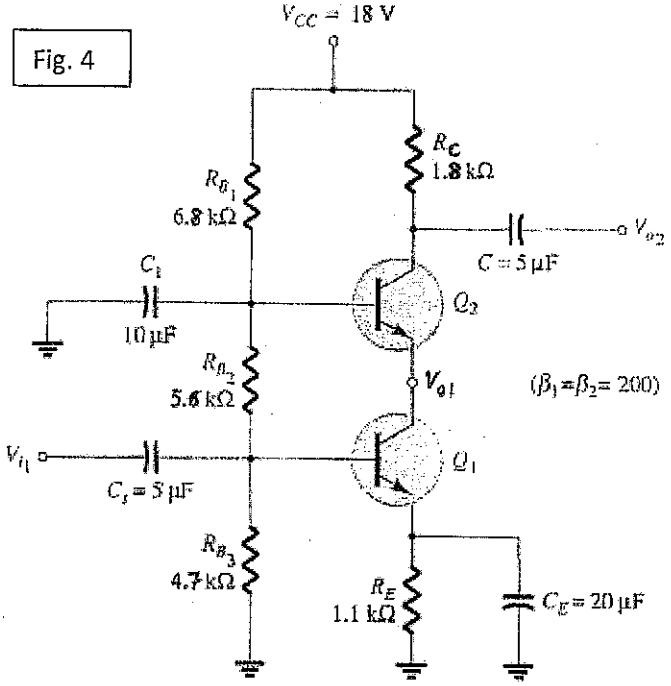
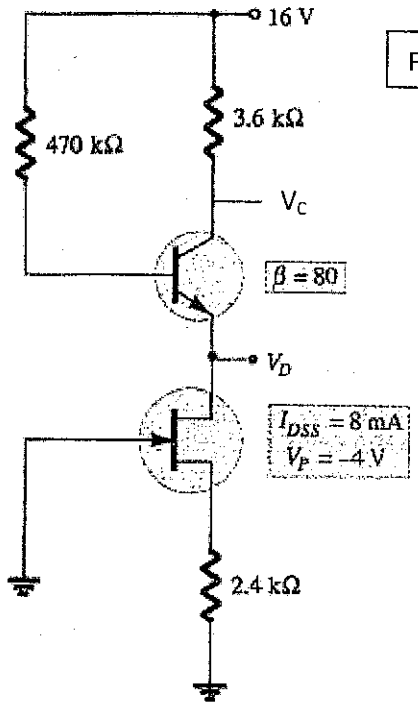


Fig. 5



Q6) Determine V_D and V_C for the network of Fig. 5. **(5)**

Q7) **(5)**

a) What turns ratio transformer is needed to couple an 8 Ω load so that it appears as an 8 k Ω effective load ?

b) Draw the circuit diagram and explain the working of a class B npn push-pull power amplifier using transformer coupled input.