دوائر كهربية (٢)

Kaferelsheikh University
Faculty of Engineering
Department of Electrical Engineering
Year: 3rd comm. Academic Number:
Name: ECE 3209

Date: 27/ 5 /2018
Time allowed: 3h
Full Mark: 100 degree
Final Exam: 2 page
Subject: Electronic circuits 2

This exam measures ILOs no: a.4, a.8,a.13,a.14,a.15, b.2, b.5,b.16, c.13,c.17, d7

[1] Question One[22 degrees]:

1-**Explaine the power Amplifiers classes**, power efficiency and then explains the power considerations of series fed class **A** amplifier. **[10 degrees].**

2- Determine the equivalent circuit, small-signal voltage gain V_o / V_s, the input resistance R_{in} , and the output resistance $R_{out} = R_{of}$. The transistor has β= 100, for the fig.1. **[12 degrees].**

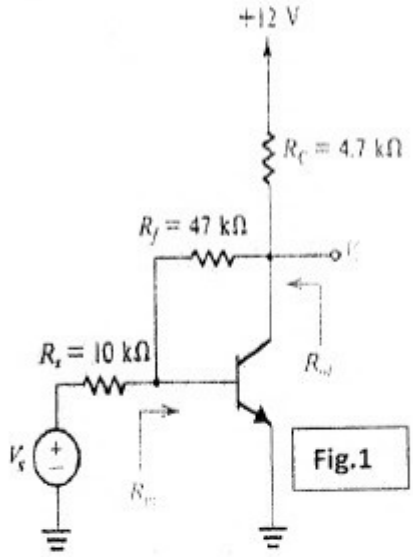

Fig.1

[2] Question Two[22 degrees]:

1. **Find the equivalent** circuit for the following:
   a. Voltage series F.B. connection. **[6 degrees].**
   b. Voltage shunt F.B. connection using FET. **[6 degrees].**
2. **Analysis the RC phase shift oscillator,** to get an expression of its resonance frequency when **1-** $R \neq R_L$ **2-** $R = R_L$. **[10 degrees].**

[3] Question Three[20 degrees]:

1. Analysis the crystal oscillator, to get an expression of its resonance frequency, then explains the characteristics of the quartz crystal **[8degrees].**

2. Design an oscillator circuit using a crystal oscillator with an operation amplifier, and then define this type of oscillator **[6 degrees].**

3. Determine the value of capacitance C_1 and R_1 if R_2 =10kΩ C_2 = 0.1mF R_3 =10 kΩ, R4 =1kΩ in the Wien bridge oscillator shown has an output frequency of 1kHz as shown in Fig.2. **[6 degrees].**

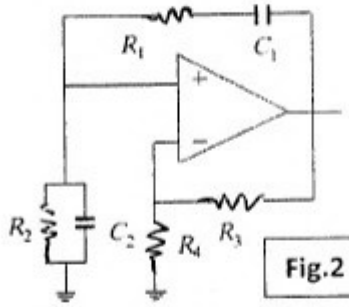

Fig.2

[4] Question Four[20 degrees]:

1. Drive an expression of the ripple factor of capacitor filter [7 degrees].

2. Design and explain a Op-Amp series regulator. [6 degrees].

3. Calculate the operating frequency of the following oscillator circuit, if C1 = 0.033 μF and L1 = 175 mH, then Calculate the operating frequency of the following oscillator circuit, if C1 = 0.047 μF and L1 = 150 mH. . as shown in Fig.3 [7 degrees].

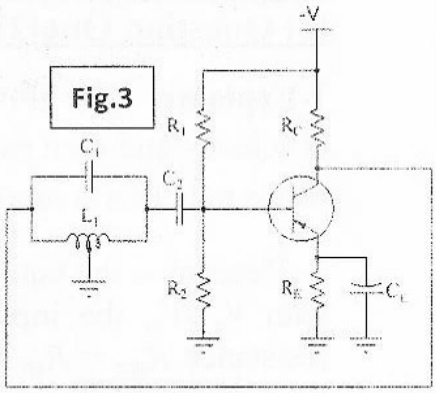

Fig.3

[5] Question Five[16 degrees]:

1. **Define the** Multivibrator and its type, Sketch the block diagram of transistor Bistable Multivibrator and explain its operation. . [10 degrees].

2. **Determine the regulated** output voltage from the circuit of Fig.4. [6 degrees].

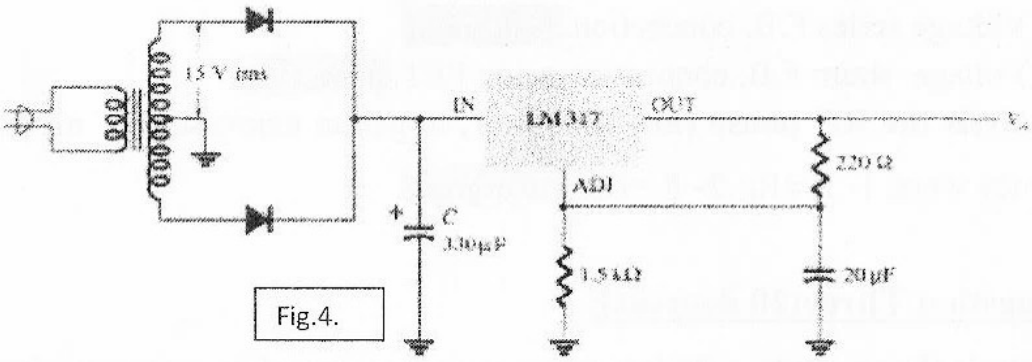

Fig.4.

[*] Question [5degrees]:

Write about one of the following:

1. **Super capacitor.**
2. **Nano technology.**
3. **Electronic papers.**
4. **Opt coupler and opt isolator.**