GANPAT UNIVERSITY
B.TECH SEM.III BIOMEDICAL & INSTRUMENTATION ENGINEERING
REGULAR EXAMINATION NOV-DEC 2011
2BM301: LINEAR ELECTRONICS

TIME: 3 HOURS   TOTAL MARKS-70

INSTRUCTION: -1.Answers to the 2 sections must be written in the separate answer books
                 2. Figures to the right indicate marks.
                 3. Conventional terms or notation are used.

SECTION-I

Que.-1   12

(a)   Explain the Transistor regions. And also Explain the Voltage divider Biasing of the transistor?

(b)   Explain the BJT r_e Model for (i) CB configuration (ii) CE configuration.

OR

Que.-1   12

(a)   Write short note on BJT modeling and derive the equation of the input impedance, output impedance, voltage gain, current gain.

(b)   Explain operating Point & Load line. Derive the Equations of operating point for the Emitter stabilized Bias Configuration

Que.-2   11

(a)   Explain in brief types of power amplifier? Explain the series fed class 'A' amplifier?

(b)   For a common base configuration of fig. 1 with IE=4mA, α=0.991 & AC signal of 3mV applied between the base & emitter terminals;
1.   Determine the i/p impedance
2.   Calculate the voltage gain if a load of 610Ω is connected to the output terminals.
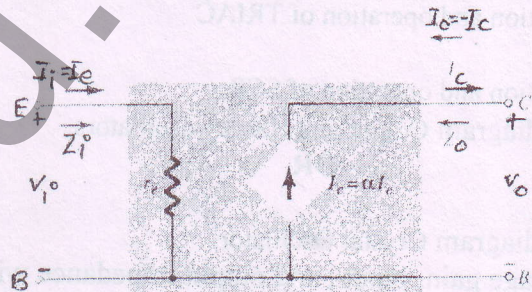3.   Find the output impedance & current gain.

fig:1

OR

Que.-2

 (a) What are the Advantages of the negative feedback system & explain the effect of negative feedback on Gain & Bandwidth? And also Obtain the Voltage gain for voltage- series feedback.

 (b) Calculate the values of collector current, emitter current & β_{dc} for transistor with α_{dc}=0.99 & I_{CBO}=5μA, I_B=100μA.

Que.-3

 (a) Explain the BJT two ports Model with its parameters.

 (b) Explain the Darlington pair connection in brief

 (c) Explain the transformer coupled Class 'B' amplifier.

 (d) Draw the d.c. load line for the emitter circuit when Vcc=16V, Rc=2KΩ, V_{BB} =16V, R_B=100KΩ & h_{fe}=100.

SECTION-II

Que.-4

 (a) Explain the effects of R_S & R_L on BJT.

 (b) For the network shown in fig.2 determine: i))r_e ,ii)Zi, iii)Zo,and iv) Av
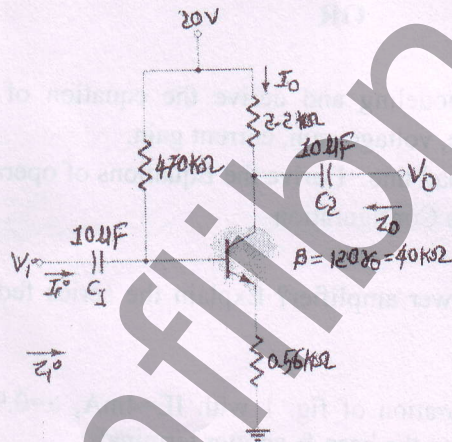

Fig.2

OR

Que.-4

 (a) Explain the construction and operation of n channel JFET

 (b) Explain the construction and operation of TRIAC

Que.-5

 (a) Explain the construction and operation of SCR

 (b) Explain with neat diagram Colpitt and Hartley oscillators.

OR

Que.-5

 (a) Explain with neat diagram Crystal Oscillator.

 (b) Determine the voltage gain, input , and output impedance with feedback for voltage series feedback having A=-100, Ri=10KΩ,and Ro=20KΩ for feedback of i) β= -0.1 and ii) β= -0.5

Que.-6   **Answer the following question(Any Two)**   12

(a)   Describe the Basic operation of the oscillator.

(b)   Explain the Emitter follower circuit with neat diagram and derive the equation for voltage gain.

(c)   Describe with neat diagram Wein Bridge Oscillator with Lead Lag Circuit

END OF PAPER