JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, March - 2022
ELECTRONIC CIRCUIT ANALYSIS
(Common to ECE, EIE)

Time: 3 Hours
Max. Marks: 75

Answer any five questions
All questions carry equal marks

1.a) Derive expression for current gain, voltage gain and input impedance of Darlington pair Emitter follower.
 b) Explain the need of cascading amplifiers. [10+5]

2.a) Draw the circuit diagram of RC coupled amplifier and explain its operation.
 b) Derive the relation between f_α, f_β and also define them. [10+5]

3.a) Derive the input resistance, output resistance and voltage gain with feedback for Voltage shunt negative feedback amplifier using block diagram.
 b) List out the advantages of negative feedback amplifiers. [10+5]

4.a) A negative feedback of 0.005 is applied to an amplifier whose open loop gain is 60 dB. If the open loop gain gets reduced by 12%, how much the overall gain gets altered?
 b) A Hartley Oscillator is designed with L_1 = 2 mH, L_2 = 20 µH and a variable capacitance. Determine the range of capacitor values if the frequency of oscillation is varying between 950 KHz and 2050 KHz. [7+8]

5.a) Obtain the expression for frequency of oscillations and condition of oscillations for colpitt's oscillator. A colpitt's oscillator has C_1=0.16 µF, C_2=15.8µF and its frequency of oscillation is 20 KHz. Calculate the value of L.
 b) What are the merits of crystal oscillators? Draw the circuit diagram. [8+7]

6.a) With a neat diagram, explain the principle of operation of class B push-pull amplifier and find its efficiency.
 b) Explain a crossover distortion in power amplifiers, how it can be eliminated? [10+5]

7.a) Draw the class-A transformer coupled power amplifier and explain its operation and derive the equation for its efficiency and explain its working.
 b) Compare Astable and Monostable multivibrators in terms of their operation. [10+5]

8.a) Design Schmitt trigger circuit using Transistor and explain its working with necessary waveforms.
 b) Perform the analysis of Bistable multivibrator using transistors with neat sketch. [7+8]

---ooOoo---