

**R18**

Code No: 154AW

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**

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- 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  $f_{\alpha}$ ,  $f_{\beta}$  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,  $L_2 = 20$   $\mu$ H 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  $C_1=0.16$   $\mu$ F,  $C_2=15.8$   $\mu$ F 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]

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