Code No: 154AW **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, August/September - 2022
ELECTRONIC CIRCUIT ANALYSIS
(Electronics and Computer Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Derive the components of the Hybrid - π model in terms of h parameters in CE Configuration.
b) Draw the circuit for CASCODE Amplifier. Explain its working, and how it is useful at high frequency? [9+6]

2.a) Draw and derive the expression for input impedance and current gain of Darlington amplifier.
b) Explain different coupling schemes used in amplifiers. [9+6]

3.a) Explain the characteristics of negative feedback amplifier.
b) Derive the expressions for the input and output resistances of current series feedback amplifier. [7+8]

4.a) Explain the method of analysis of voltage series amplifier.
b) An amplifier have a voltage gain of 200, input resistance 10 kΩ and output resistance of 50kΩ. If 2% of input voltage is feedback to the input in series opposition than, calculate modified values of gain, input and output resistances. [8+7]

5.a) Draw the circuit diagram for crystal oscillator and explain its operation.
b) Derive the frequency of oscillation of Hartley oscillator. [8+7]

6.a) Derive an expression for the frequency of oscillation of a RC phase shift oscillator. Determine the min h_{fe} for the transistor to sustain oscillations.
b) In a Colpitts oscillator C_1 = 0.001 µF and C_2 = 0.01 µF and L = 5 µH. Calculate:
i) Frequency of oscillations. ii) If 'L' is doubled, find the new frequency. [9+6]

7.a) What is a stagger tuned amplifier? Explain its advantages and disadvantages.
b) How is the bandwidth of tuned amplifier improved? Draw such a circuit and explain its working. [7+8]

8.a) Draw the circuit diagram of Boot strap time base generator and explain its operation in detail.
b) Sketch the circuit diagram of Schmitt trigger and explain its operation. [8+7]

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