# MARRI LAXMAN REDDY
## INSTITUTE OF TECHNOLOGY AND MANAGEMENT
**(AN AUTONOMOUS INSTITUTION)**
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

## II B.Tech II SEM Supply End Examination, March 2022
### Electronic Circuit Analysis
### (ECE)

**Time: 3 Hours.**              **Max. Marks: 70**

Note: 1. Answer any FIVE questions.
        2. Each question carries 14 marks and may have a, b as sub questions.

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| 1 | a) | Derive an expression for hybrid-Π conductance in terms of low-frequency h-parameters. | 7M | CO1 | BL |
| | b) | Draw the circuit diagram of Darlington emitter follower and derive the expression for input impedance. | 7M | CO1 | BL |
| 2 | a) | Explain the working of cascade amplifier with neat circuit diagram. | 7M | CO1 | BL |
| | b) | A transistor biased at 5mA, 10V, $h_{ie}$ =600Ω, $h_{fe}$=100, $C_C$=3pF and current gain of 10 at a frequency of 20MHz. Find β cut off frequency, gain band width product, $r_{b'e}$ and $r_{bb'}$. | 7M | CO1 | BL |
| 3 | a) | Outline the general characteristics of Negative Feedback Amplifiers. | 7M | CO2 | BL |
| | b) | Draw the practical circuit for voltage series feedback amplifier and then find the voltage gain, input impedance and output impedance. | 7M | CO2 | BL |
| 4 | a) | Design a class-B power amplifier to deliver 25W to a load resistors $R_L$=8Ω, using transformer coupling $V_m=V_{cc}$=25V, Assume reasonable data wherever necessary. | 7M | CO2 | BL |
| | b) | Briefly explain the concept of Thermal Stability. | 7M | CO3 | BL |
| 5 | a) | Draw Wein Bridge Oscillator circuit diagram and then derive the expression for condition for Oscillations and Frequency of Oscillations. | 10M | CO3 | BL |
| | b) | Explain why RC Phase shift oscillators are not used at high frequencies. | 4M | CO3 | BL |
| 6 | a) | Explain the basic operation of small-signal single Tuned Amplifier and then derive the expression for its bandwidth. | 7M | CO4 | BL |
| | b) | In what way Tuned Amplifier is different from other normal Voltage Amplifier? | 7M | CO4 | BL |
| 7 | a) | Discuss the principle operation of series-fed Class-A Amplifier with the help of circuit diagram and then prove that its maximum conversion efficiency is 25%. | 7M | CO4 | BL |
| | b) | What is a monostable multivibrator? Explain with the help of a neat circuit diagram the principle of operation of a monostable multivibrator. | 7M | CO5 | BL |
| 8 | a) | Design a one-shot multivibrator to develop an output pulse of 140μs duration. Assume $h_{femin}$=20, $i_{csat}$=6mA, $V_{cc}$=6V, $V_{bb}$=-1.5V | 9M | CO5 | BL |
| | b) | Discuss different methods improving linearity. | 5M | CO5 | BL |

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