



B.Tech III Semester Regular Examinations, February 2022
ANALOG ELECTRONICS
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Maximum Marks: 70

Date: 23.02.2022 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 List the steps to draw ac equivalent circuit of BJT.
- 2 Draw the small signal model of FET.
- 3 List the advantages of negative feedback amplifiers.
- 4 State Barkhausen's criterion for sustained oscillations for oscillator circuits.
- 5 What is the limitation of transformer coupled Push-Pull amplifier?
- 6 What are the differences between small signal and power amplifiers?
- 7 Define Low Pass Filter.
- 8 List a few applications of Clampers.
- 9 How can a diode be operated as a switch?
- 10 Draw the output waveform of a Monostable Multivibrator.

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 (a) With neat circuit diagram and ac equivalent circuit explain the operation of CE Amplifier with voltage divider bias and derive the expression for input impedance, output impedance, current gain and voltage gain. 6M
(b) For a CE amplifier with voltage divider bias, if $R_1 = 1k\Omega$, $R_2 = 1.2k\Omega$, $R_c = 1k\Omega$, $h_{ie} = 33\Omega$, and $h_{oe} = 0.1mS$, find the values of Input impedance, and Output impedance. 4M

OR

- 12 Draw the circuit diagram of a CD amplifier, obtain the ac equivalent circuit and derive expression for Voltage gain, Input impedance and Output Impedance. 10M
 - 13 (a) Draw the block diagram of a Voltage series feedback amplifier and derive expression for Gain and Input Impedance. 5M
(b) Draw the circuit of a practical Voltage series feedback amplifier and derive expression for Gain. 5M
- OR
- 14 With neat circuit diagram explain the operation of a RC phase shift oscillator and derive expression for frequency of oscillation and feedback factor β . 10M

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| 15 | (a) With circuit diagram and output waveforms, describe the operation of a Class A Power amplifier. | 6M |
| | (b) List the characteristics of Class A amplifier. | 4M |
| | OR | |
| 16 | (a) Write short notes on Thermal stability. | 4M |
| | (b) Derive the value of maximum overall efficiency of Class B amplifier | 6M |
| 17 | With neat circuit diagrams and output wave forms explain the operation of positive and negative clippers using diodes. | 10M |
| | OR | |
| 18 | With neat circuit diagrams and output wave forms explain the operation of biased and unbiased clampers using diodes. | 10M |
| 19 | With relevant diagrams describe the operation of a Schmitt Trigger using Transistors and derive expression for frequency of oscillation. | 10M |
| | OR | |
| 20 | With relevant diagrams describe the operation of an astable multivibrator and derive expression for frequency of oscillation. | 10M |