**20EI404**

**Hall Ticket Number:**

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| **II/IV B.Tech (Regular\Supplementary) DEGREE EXAMINATION** | | | |
| **July/August, 2023** | **Electronics & Instrumentation Engineering** | | |
| **Fourth Semester** | **Analog Electronic Circuits** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |

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|  |  |  | CO | BL | M |
| 1 | a) | Define (i) Ripple Factor, (ii) Efficiency of rectifier. | CO1 | L1 |  |
|  | b) | Draw the Bridge rectifier circuit with input and output waveforms | CO1 | L2 |  |
|  | c) | Compare the performance of L and π- section filters. | CO1 | L2 |  |
|  | d) | Define fα, fβ and fT for high frequency transistor amplifiers | CO3 | L1 |  |
|  | e) | If fT = 500MHZ and hfe = 100 for a BJT, solve its fβ | CO3 | L3 |  |
|  | f) | Draw the hybrid-π model for CE configuration | CO3 | L2 |  |
|  | g) | Define transconductance of transistor at high frequencies. | CO3 | L1 |  |
|  | h) | Write the differences between positive and negative feedback amplifiers. | CO4 | L2 |  |
|  | i) | Outline the general characteristics of negative feedback amplifiers | CO4 | L2 |  |
|  | j) | What is the sensitivity of an amplifier | CO4 | L1 |  |
|  | k) | Consider an amplifier with gain 20 and bandwidth 10KHz. If positive feedback is provided with a feedback factor of 0.1 Solve the new bandwidth | CO4 | L3 |  |
|  | l) | List out various types of power amplifiers. | CO5 | L1 |  |
|  | m) | Is power amplifier amplifies the power directly? Justify your answer | CO5 | L2 |  |
|  | n) | What are the applications of power amplifiers | CO5 | L1 |  |
| **Unit-I** | | | | | |
| 2 | a) | Draw and explain the operation of Bridge rectifier. | CO1 | L2 | 7M |
|  | b) | A full wave rectifier produces an RMS voltage of 10V at 50Hz and feeds a resistance of 1.1KΩ and filter uses C=50μF. Solve the ripple output voltage | CO1 | L3 | 7M |
|  |  | **(OR)** |  |  |  |
| 3 | a) | Develop the expression for the ripple factor of π – section filter when used with half wave rectifier. Make necessary approximations. | CO1 | L3 | 7M |
|  | b) | Draw and Explain the Block diagram of Regulated Power Supply. | CO2 | L2 | 7M |
| **Unit-II** | | | | | |
| 4 | a) | Develop an expression for CE short circuit current gain at high frequencies | CO3 | L3 | 7M |
|  | b) | With hybrid π equivalent circuit for CE configuration, develop the expressions for transconductance. | CO3 | L3 | 7M |
| **(OR)** | | | | | |
| 5 | a) | Develop the voltage gain of CE amplifier at high frequencies | CO3 | L3 | 7M |
|  | b) | Examine about CD amplifier at high frequencies | CO3 | L4 | 7M |
| **Unit-III** | | | | | |
| 6 | a) | Compare current series and current shunt feedback configurations | CO4 | L2 | 7M |
|  | b) | Draw the block diagram of Voltage-shunt feedback amplifier and develop its gain, input impedance and output impedances. | CO4 | L3 | 7M |
| **(OR)** | | | | | |
| 7 | a) | Draw the block diagram of Current -Shunt feedback amplifier and develop its gain, input impedance and output impedances. | CO4 | L3 | 7M |
|  | b) | An amplifier requires an input signal of 60 mV to produce a certain output. With negative feedback to get the same output, the required input signal is 0.5 V. The voltage gain with feedback is 90. Solve the open loop gain and feedback factor. | CO4 | L3 | 7M |
| **Unit-IV** | | | | | |
| 8 | a) | Explain the operation of high pass RC circuit | CO5 | L2 | 7M |
|  | b) | Analyse the operation of a positive clipper with neat sketches | CO5 | L4 | 7M |
| **(OR)** | | | | | |
| 9 | a) | Explain about push pull class-B power amplifier | CO5 | L2 | 7M |
|  | b) | Analyse the operation of a negative clamper with neat sketches | CO5 | L4 | 7M |

