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| **20EI404**  **Hall Ticket Number:**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |      |  |  |  | | --- | --- | --- | | **II/IV B.Tech (Regular) DEGREE EXAMINATION** | | | | **August,2022** | **Electronics and Instrumentation Engineering** | | | **Fourth Semester** | **Analog Electronic circuits** | | | **Time: Three Hours** | | **Maximum:70 Marks** | | | | | | | |  |
| |  |  | | --- | --- | | ***Answer question 1 compulsory.*** | **(14X1 = 14 Marks)** | | ***Answer one question from each unit.*** | **(4X14=56 Marks)** | | | | | | | |  |
| 1. | a) | |  | | --- | | What is Rectifier? | |  |  |
|  | b) | Give the expression for PIV of Bridge Rectifier. |  |  |
|  | c) | Draw circuit diagram of shunt capacitance filter with input and output waveforms. |  |  |
|  | d) | Define Transconductance gm. |  |  |
|  | e) | Give advantages of negative feedback. |  |  |
|  | f) | What is Power amplifier? Give Classification of power amplifiers. |  |  |
|  | g) | What is Harmonic Distortion? |  |  |
|  | h) | Draw circuit diagram of Push-pull Class B Power amplifier. |  |  |
|  | i) | Give differences between clipping and Clamping. |  |  |
|  | j) | Define rise time. |  |  |
|  | k) | What is meant by voltage sampling in feedback amplifiers? |  |  |
|  | l) | Give types of topologies in feedback amplifiers. |  |  |
|  | m) | Draw circuit diagram of Positive peak clipper with input and output waveforms. |  |  |
|  | n) | Define Negative clamper. |  |  |
| **Unit –I** | | | | |
| 2. | a) | Draw the circuit diagram of the HWR and derive the expression for ripple factor and efficiency | CO1 | 7M |
|  | b) | **A full-wave rectifier uses two diodes, the internal resistance of each diode may be assumed constant at 20 Ω. The transformer r. m. s. secondary voltage from centre tap to each end of secondary is 50 V and load resistance is 980 Ω. Find : (i) the mean load current (ii) the r.m.s. value of load current** | CO1 | 7M |
| **(OR)** | | | | |
| 3. | a) | Explain working of Choke input (inductor) filter and derive the expression for ripple factor. | CO1 | 7M |
|  | b) | Draw the block diagram of regulated power supply and explain functionality of each block. | CO1 | 7M |
| **Unit –II** | | | | |
| 4. | a) | Draw and explain the Equivalent Hybrid –π model. | CO2 | 7M |
|  | b) | Derive the expressions for different elements of the Hybrid –π model (i) Trans Conductance (ii) input conductance (iii) feedback conductance (iv) output conductance | CO2 | 7M |
| **(OR)** | | | | |
| 5. | a) | Derive the expressions for Hybrid- II capacitances. | CO2 | 7M |
|  | b) | Derive CE short circuit current gain at high frequencies and obtain the expression for fT | CO2 | 7M |
| **Unit –III** | | | | |
| 6. | a) | Draw the block diagram of Current Shunt feedback amplifier and derive the expression for gain, input resistance and output resistance | CO3 | 7M |
|  | b) | Explain Characteristics of negative feedback amplifier. | CO3 | 7M |
| **(OR)** | | | | |
| 7. | a) | Draw the block diagram of Voltage Series feedback amplifier and derive the expression for voltage gain, input resistance and output resistance | CO3 | 7M |
|  | b) | Draw the block diagram of the amplifier with feedback and explain each block | CO3 | 7M |
| **Unit –IV** | | | | |
| 8. | a) | Give the expression for d. c power input, a. c power output and efficiency of a Transformer coupled class A power amplifier | CO4 | 7M |
|  | b) | Prove that Conversion efficiency of a class B Push Pull power amplifier is 78.5%. | CO4 | 7M |
| **(OR)** | | | | |
| 9. | a) | Explain the working of combinational clipper with a neat circuit diagram. | CO4 | 7M |
|  | b) | Give difference between Low pass RC circuit and high pass RC Circuit. | CO4 | 7M |

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