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| **20EC402**  **Hall Ticket Number:**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |      |  |  |  | | --- | --- | --- | | **II/IV B.Tech( Regular) DEGREE EXAMINATION** | | | | **August,2022** | **Electronics and Communication Engineering** | | | **Fourth Semester** | **Electronics Circuit Analysis** | | | **Time: Three Hours** | | **Maximum:70 Marks** | | | | | | | | | |  |
| |  |  | | --- | --- | | ***Answer question 1 compulsory.*** | **(14X1 = 14 Marks)** | | ***Answer one question from each unit.*** | **(4X14=56 Marks)** | | | | | | | | | |  |
| 1 | a) | | Write the expression for Voltage gain AVS in terms of AV of Amplifier | |  | CO1 |
|  | b) | | Draw small signal model of FET amplifier | |  | CO1 |
|  | c) | | Define trans-conductance of FET. | |  | CO1 |
|  | d) | | Specify the effect of negative feedback on stability? | |  | CO1 |
|  | e) | | What is cross over distortion? | |  | CO2 |
|  | f) | | What is cascading amplifier? | |  | CO2 |
|  | g) | | Define de-sensitivity in feedback amplifiers. | |  | CO2 |
|  | h) | | Draw the frequency response of an amplifier | |  | CO3 |
|  | i) | | How negative feedback reduces distortion in an amplifier? | |  | CO3 |
|  | j) | | Classify oscillators | |  | CO3 |
|  | k) | | What are the Barkhausen Conditions? | |  | CO3 |
|  | l) | | Advantage of RC oscillators compare with LC oscillators | |  | CO4 |
|  | m) | | What are the advantages of power amplifiers? | |  | CO4 |
|  | n) | | What are the applications of oscillators? | |  | CO4 |
| **Unit –I** | | | | | | |
| 2. | | a) | | Draw the h parameter equivalent circuit for a common Emitter configuration and derive expression for current gain, Voltage gain, Input impedance and output impedance . | CO1 | 7M |
|  | | b) | | State and draw the circuit diagram of Miller’s and Dual of Miller’s theorem. | CO1 | 7M |
| **(OR)** | | | | | | |
| 3. | | a) | | Draw a Darlington emitter follower and explain why the input impedance is higher than that of single stage emitter follower. | CO1 | 7M |
|  | | b) | | Draw the circuit diagram of low frequency common source FET amplifier and explain. | CO1 | 7M |
| **Unit –II** | | | | | | |
| 4. | | a) | | What is the effect of emitter bypass capacitor on the low frequency response of the amplifier? | CO2 | 7M |
|  | | b) | | Explain Class AB circuit biasing using BJT’s. | CO2 | 7M |
| **(OR)** | | | | | | |
| 5. | | a) | | Explain RC coupled amplifier with neat sketch and specify the importance of each element. | CO2 | 7M |
|  | | b) | | Explain Class A circuit with necessary diagrams. | CO2 | 7M |
| **Unit –III** | | | | | | |
| 6. | | a) | | Explain characteristics and advantages of negative feed back amplifier. | CO3 | 7M |
|  | | b) | | Derive the expressions for input impedance, and output impedance of a Current shunt feedback amplifier. | CO3 | 7M |
| **(OR)** | | | | | | |
| 7. | | a) | | Explain the concept of a feedback amplifier with the help of a block diagram. | CO3 | 7M |
|  | | b) | | Derive the expressions for input impedance, and output impedance of a Voltage series feedback amplifier. | CO3 | 7M |
| **Unit –IV** | | | | | | |
| 8. | | a) | | Draw the circuit of Wein bridge oscillator and explain its operation. | CO4 | 7M |
|  | | b) | | Draw the circuit of Colpitt’s oscillator and explain its operation. Derive the expression for the frequency of oscillations and condition for sustained oscillations. | CO4 | 7M |
| **(OR)** | | | | | | |
| 9. | | a) | | Draw and Explain RC phase shift oscillator using BJT and derive an expression for frequency of oscillations . | CO4 | 7M |
|  | | b) | | Write short notes on Crystal oscillator with circuit . | CO4 | 7M |

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