. **18EI404**

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| **II/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | |
| **August, 2021** | **Electronics Instrumentation Engineering** | | |
| **Fourth Semester** | **Analog Electronic Circuits-1** | | |
| Time: Three Hours | | Maximum : 50 Marks | |
| *Answer Question No.1 compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer ONE question from each unit.* | | | (4X10=40 Marks) |

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| 1 | Answer all questions | | (10X1=10 Marks) | |
|  | a) | Define ripple factor and efficiency of a rectifier | |  |
|  | b) | Draw the block diagram of the power supply | |  |
|  | c) | Define PIV of the full wave rectifier | |  |
|  | d) | Draw the equivalent circuit diagram of the FET model at high frequency | |  |
|  | e) | What are the Hybrid –II capacitances | |  |
|  | f) | Define sensitivity of the feedback amplifier | |  |
|  | g) | What are the advantages of negative feedback amplifier | |  |
|  | h) | If the gain of the amplifier is 100 and feedback factor is 0.01, find the voltage gain with negative feedback. | |  |
|  | i) | What is the effect of cross over distortion | |  |
|  | j) | What is the response of step input to a high pass RC circuit | |  |
| **Unit - I** | | | | |
| 2 | a) | Draw the circuit diagram of the FWR and derive the expression for ripple factor and efficiency | | 5M |
|  | b) | A HWR has a load of 3.5 k ohm. If the diode resistance and secondary coil resistance together have a resistance of 800ohm and the input voltage has a signal voltage of peak value 240 V. Calculate  (a) peak, average and rms value of voltage and current (b) Ripple factor  (c) efficiency of the rectifier | | 5M |
| **(OR)** | | | | |
| 3 | a) | What are the different types of filters and derive the expressions for ripple factor | | 5M |
|  | b) | Draw the generalized block diagram of the voltage series regulator and voltage shunt regulator with neat sketch and explain. | | 5M |
| **Unit - II** | | | | |
| 4 | a) | Draw the Hybrid II transistor model and derive the expressions for Hybrid II conductances | | 5M |
|  | b) | Derive CE short circuit current gain at high frequencies and obtain the expression for fT | | 5M |
| **(OR)** | | | | |
| 5 | a) | Draw the CD amplifier at high frequencies and obtain the expressions for voltage gain and output impedance | | 5M |
|  | b) | Draw the CS amplifier at high frequencies and obtain the expressions for voltage gain and output impedance | | 5M |
| **Unit - III** | | | | |
| 6 | a) | Draw the block diagram of the amplifier with feedback and explain each block | | 5M |
|  | b) | Draw the practical circuit diagram of the voltage series feedback amplifier and derive the expressions for voltage gain, input resistance and output resistance | | 5M |
| **(OR)** | | | | |
| 7 | a) | Discuss the effect of negative feedback on input resistance of the amplifier | | 5M |
|  | b) | Draw the practical circuit diagram of current series feedback amplifier using BJT and derive its voltage gain, input impedance and output impedance with and without feedback. | | 5M |
| **Unit - IV** | | | | |
| 8 | a) | Draw the circuit diagram of the Transformer coupled Class A power amplifier and find its efficiency. | | 5M |
|  | b) | Draw the circuit diagram for Class-B push pull Amplifier and derive its maximum efficiency. | | 5M |
| **(OR)** | | | | |
| 9 | a) | Explain different types of diode clippers with neat diagrams. | | 5M |
|  | b) | Draw the circuit diagram of the low pass RC circuit and derive the transfer fuction | | 5M |

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