|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **20CS203**  **Hall Ticket Number:**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |      |  |  |  | | --- | --- | --- | | **I/IV B.Tech( Regular/Supplementary) DEGREE EXAMINATION** | | | | **September,2022** | **Computer Science Engineering** | | | **Second Semester** | **Basic Electrical & Electronics Engineering** | | | **Time: Three Hours** | | **Maximum:70 Marks** | |  |
| |  |  | | --- | --- | | ***Answer question 1 compulsory.*** | **(14X1 = 14 Marks)** | | ***Answer one question from each unit.*** | **(4X14=56 Marks)** | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. | a) | State Kirchhoff’s current law and Voltage law. | CO1 |  |
|  | b) | A coil of inductance 0.64 H and resistance 40 Ω is connected in series with a capacitor of capacitance 12 µF. Estimate the frequency at which resonance will occur | CO1 |  |
|  | c) | The peak value of a sine wave is 200 V. Its average value is. | CO1 |  |
|  | d) | What is back e.m.f. or counter voltage? | CO2 |  |
|  | e) | Define slip of an induction motor. | CO2 |  |
|  | f) | Write the impedance of an RC series circuit and draw its phasor diagram. | CO1 |  |
|  | g) | Draw the symbol of N- P- N transistor | CO3 |  |
|  | h) | Write two applications of Transistor. | CO3 |  |
|  | i) | Compare CB, CE and CC configurations. | CO3 |  |
|  | j) | What is the use of capacitor filter in rectifier? | CO3 |  |
|  | k) | List the advantages of MOSFET. | CO4 |  |
|  | l) | What is clamper? | CO4 |  |
|  | m) | Mention the ideal characteristics of OP-AMP. | CO4 |  |
|  | n) | Define CMRR. | CO4 |  |
| **Unit –I** | | | | |
| 2. | a) | In the series-parallel circuit shown in the Figure below. Find: (i) The total resistance of the circuit. (ii) The total current flowing through the circuit | CO1 | 7M |
|  | b) | A coil has a resistance of 5 Ω and an inductance of 31.8 mH in series. Calculate the current taken by the coil and power factor when connected to 200 V, 50 Hz supply. Draw the vector diagram. | CO1 | 7M |
|  |  | **(OR)** |  |  |
| 3. | a) | Calculate the current in 2Ω resistor in the given circuit using super position theorem. | CO1 | 7M |
|  | b) | Explain the following terms relating alternating current : (i) R.M.S. value (ii) Average value (iii) Form factor (iv) Peak factor. | CO1 | 7M |
|  |  | **Unit –II** |  |  |
| 4. | a) | Discuss about the construction and principle of operation of DC motors. | CO2 | 7M |
|  | b) | Discuss about the voltage regulation of the transformer. | CO2 | 7M |
|  |  | **(OR)** |  |  |
| 5. | a) | Explain in detail about various transformer losses. | CO2 | 7M |
|  | b) | Explain the working of induction motor. | CO2 | 7M |
|  |  | **Unit –III** |  |  |
| 6. | a) | Explain the working of a PN junction diode when it is connected in forward bias and reverse bias. Draw V-I Characteristics of PN Junction Diode. | CO3 | 7M |
|  | b) | Define ‘Ripple Factor’ and derive an expression for ripple factor of a full wave rectifier. | CO3 | 7M |
|  |  | **(OR)** |  |  |
| 7. | a) | With neat diagram, explain the Input and Output characteristics of a BJT in CB Configuration. | CO3 | 7M |
|  | b) | Draw the circuit diagram of a half wave rectifier and explain its operation. | CO3 | 7M |
|  |  | **Unit –IV** |  |  |
| 8. | a) | Describe the working principle of N-channel JFET. | CO4 | 7M |
|  | b) | Explain in detail and give the realization OPAMP of as an Integrator. | CO4 | 7M |
|  |  | **(OR)** |  |  |
| 9. | a) | Explain the operation of OP-AMP as a non-inverting and inverting amplifier. | CO4 | 7M |
|  | b) | Draw the OP-AMP circuit which acts as differentiator and explain its operation. | CO4 | 7M |

****