Latest update: 10am,19/3/2023

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| **Electrostatics**     |  |  | | --- | --- | | Question | Final Answer | | 1. Determine the force between two free electrons spaced 0.1nm apart. | 23nN | | 1. Two equally charged balls are 4cm apart and repels each other with a force of 5.063. Compute the charge on each ball. |  | | 1. Two point charges are 3m apart and their combine charges is . If the repulsive force between the two point charges is 0.189N, determine their charges. |  |     **AC Circuits**   |  |  | | --- | --- | | Question | Final Answer | | 1. A circuit consists of a 20 resistor, a power source of 50Hz and an inductor of inductance 47mH. If the power source has a peak voltage of 340V, determine the rms voltage, the inductive reactance and the impedance of the circuit. |  | | 1. A circuit connected to a 240V source has an impedance of 25 and a current-voltage phase angle of , determine the average power. | 2.077kW |   **Capacitors**   |  |  | | --- | --- | | Question | Final Answer | | 1. Two parallel plate capacitors and are connected in series and fully charged by a 9V battery. If and has capacitances of and respectively,    1. Determine effective capacitance of the circuit.    2. Determine the potential difference across each capacitor |  | | 1. A parallel plate capacitor of 35µF is charged by a 24V battery. The battery is disconnected after the capacitor is fully charged and then connected to a resistor to discharge. Determine    1. the charge on the capacitor when it is fully charged    2. the time it takes for the capacitor to discharge to 20% during the discharge process. |  | |