1. What is the area of the plates of a parallel plate capacitor of capacitance 2F with separation between plates 0.5 cm?
2. You are given three capacitors of value 2μF, 3μF, 6μF. How will you connect them to a resultant capacity of 4μF?
3. Explain how the polarization of a dielectric reduces the electric field inside the dielectric.
4. A parallel plate capacitor with air between the plates has a capacitance 5μF. The separation between the plates is now divided equally and the space between them is filled with mediums of dielectric constant 3, 5 and 8. Calculate the new value of capacitance.
5. A parallel plate capacitor is charged by a battery, which is then disconnected. A dielectric slab is then inserted in the space between the plates. Explain what changes, if any, occur in the values of
    i. Capacitance
    ii. Pot. Difference between the plates
    iii. Electric field between the plates
    iv. Energy stored in it
6. Sketch graph to show how charge Q acquired by capacitor of capacitance C varies with increase in potential difference b/w its plates.
7. A parallel plate capacitor with air between the plates has a capacitance of 8 pF. The separation between the plates is now reduced by half and the space between them is filled with medium of dielectric constant 5. Calculate the value of the capacitance of the capacitor in the second case.
8. Express dielectric constant in terms of capacitance.
9. Two capacitors of capacitances 6μF and 12μF are connected in series with a battery. The voltage across the 6μF capacitor is 2V. Compute the total battery voltage.
10. Find an expression for the capacitance of a parallel plate capacitor when a dielectric slab of dielectric constant K and thickness $t=d/2$ is inserted between the plates, where d is the separation between the plates.
11. Name two physical conditions on which the resistivity of a metal depends.
12. Two wires of equal length, one of copper and the other of manganin, have the resistance. Which wire is thicker?
13. Two conducting wires X and Y of same diameter but different materials are joined in series across a battery. If the number density of electrons in X is twice in Y, find the ratio of drift velocity of electrons in the two wires.
14. Derive an expression for the resistivity of a conductor in terms of number density of free electrons and relaxation time.
15. Using the mathematical expression for the resistivity of a material, explain how it varies with temperature for   (a) semiconductor   (b) good conductors   (c) alloys
16. A carbon resistor of 47 kΩ is to be marked with rings of different colours for its identification. Write the sequence of the colours.