Electric Field Lines

1. **What is the direction of the electric field at a point due to a positive charge?** a) Radially inward
   b) Radially outward
   c) Tangential to the charge
   d) In the opposite direction of the charge
2. **Which of the following statements is true for electric field lines?** a) Electric field lines never cross each other.
   b) Electric field lines can form closed loops.
   c) Electric field lines are always perpendicular to the surface.
   d) Electric field lines are equally spaced in all regions.
3. **The electric field at a point is represented by an arrow. What does the length of the arrow represent?** a) Electric potential
   b) Electric field intensity
   c) Electric charge
   d) Direction of the electric field
4. **What happens to the electric field lines around a negatively charged point charge?** a) They radiate outward from the charge.
   b) They converge towards the charge.
   c) They form a uniform grid pattern.
   d) They cancel each other out.
5. **Electric field lines can be visualized using:** a) Magnetic field lines
   b) Light rays
   c) Charged particles
   d) Vector arrows
6. **Which of the following is true about the density of electric field lines?** a) The density of electric field lines is directly proportional to the charge.
   b) The density of electric field lines is inversely proportional to the charge.
   c) The density of electric field lines is independent of the charge.
   d) The density of electric field lines is constant throughout the field.
7. **The electric field lines for a uniform electric field are:** a) Curved
   b) Radial

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c) Parallel and equally spaced

d) Converging toward a point

8. **If an electric field line passes through a conducting surface, the field:** a) Is zero inside the conductor.

   b) Perpendicular to the surface inside the conductor.

   c) Parallel to the surface inside the conductor.

   d) Forms loops inside the conductor.

9. **For two point charges of equal magnitude but opposite signs, the electric field lines:** a) Radiate outward from the positive charge and inward towards the negative charge.

   b) Radiate outward from both charges.

   c) Form closed loops around both charges.

   d) Do not intersect.

10. **In the region between two parallel plates with equal but opposite charges, the electric field lines:** a) Are curved.

    b) Are parallel and uniformly spaced.

    c) Converge towards the positive plate.

    d) Form a circular pattern.

11. **At the surface of a uniformly charged spherical conductor, the electric field lines are:** a) Radially inward

    b) Radially outward

    c) Parallel to the surface

    d) Tangential to the surface

12. **Which of the following correctly describes the electric field lines due to a dipole?** a) They form circular arcs around the dipole.

    b) They radiate outward symmetrically from the dipole.

    c) They start from the positive charge and end at the negative charge.

    d) They are uniformly spaced at all points.

13. **The electric field lines for a point charge are:** a) Always straight and directed away from the charge.

    b) Always straight and directed toward the charge.

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c) Circular in nature.

d) Not affected by the sign of the charge.

14. **What happens when a positive test charge is placed in the electric field of a negative charge?** a) It moves away from the charge.

    b) It moves toward the charge.

    c) It remains stationary.

    d) It moves in a circular path.

15. **Electric field lines are closer together where the electric field is:** a) Weak

    b) Strong

    c) Zero

    d) Non-uniform

16. **The electric field inside a conductor in electrostatic equilibrium is:** a) Non-zero

    b) Zero

    c) Varies with position

    d) Equal to the potential difference

17. **Which of the following is true about electric field lines and conductors?** a) Electric field lines never enter conductors.

    b) Electric field lines are perpendicular to the surface of a conductor.

    c) Electric field lines are parallel to the surface of a conductor.

    d) Electric field lines do not interact with conductors.

18. **In the case of an electric dipole, the electric field lines:** a) Are always parallel.

    b) Point in the direction of the dipole moment.

    c) Form circular loops.

    d) Are equally spaced on both sides of the dipole.

19. **The electric field due to a point charge behaves as:** a) Inversely proportional to the square of the distance from the charge.

    b) Directly proportional to the square of the distance from the charge.

    c) Inversely proportional to the distance from the charge.

    d) Directly proportional to the distance from the charge.

20. **Which of the following is not a feature of electric field lines?** a) They originate from positive charges.

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b) They converge at negative charges.

c) They are directed from higher to lower potential.

d) They form circular paths around charges.

21. **What is the electric field inside a uniformly charged spherical shell?** a) Zero at all points.

b) Uniform and directed radially outward.

c) Uniform and directed radially inward.

d) Varies with distance from the center.

22. **Electric field lines near a positive point charge are:** a) Radially outward.

b) Radially inward.

c) Tangential to the charge.

d) Parallel to the surface.

23. **What happens to the electric field lines between two oppositely charged parallel plates?** a) They form random curves.

b) They are parallel and equally spaced.

c) They converge toward one plate.

d) They form circular loops around the plates.

24. **Which of the following describes the electric field lines of a uniformly charged infinite plane?** a) They are radial and equally spaced.

b) They are parallel and evenly spaced.

c) They form circular loops.

d) They converge toward the center of the plane.

25. **Electric field lines are denser in regions where:** a) The potential is higher.

b) The electric field strength is lower.

c) The electric field strength is higher.

d) The charge is farther away.

26. **What does the term "equipotential surface" refer to in the context of electric field lines?** a) A surface where the electric field is zero.

b) A surface where the electric field is constant.

c) A surface where the electric potential is constant.

d) A surface where electric field lines are parallel.

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27. **In a uniform electric field, the electric field lines are:** a) Parallel and equally spaced.
    b) Curved outward.
    c) Converging.
    d) Radially inward.
28. **What is the electric field at a point on the axis of an electric dipole at a large distance compared to the distance from the dipole?** a) It behaves like a point charge.
    b) It is inversely proportional to the square of the distance.
    c) It is inversely proportional to the cube of the distance.
    d) It does not follow any simple law.
29. **Which of the following statements about the electric field at a point is correct?** a) The electric field is zero if the potential at that point is zero.
    b) The electric field is always perpendicular to the potential surface.
    c) The electric field and potential are proportional.
    d) The electric field and potential are inversely proportional.
30. **Which of the following would cause the electric field lines to converge?** a) A positive point charge.
    b) A negative point charge.
    c) A dipole.
    d) A charged conducting sphere.
31. **How can you determine the strength of the electric field using electric field lines?** a) By counting the number of lines passing through a region.
    b) By observing the curvature of the lines.
    c) By noting the color of the lines.
    d) By measuring the distance between the lines.
32. **Which of the following statements is true regarding the behavior of electric field lines near a charged conductor?** a) They are perpendicular to the surface of the conductor.
    b) They are parallel to the surface of the conductor.
    c) They form circular loops inside the conductor.
    d) They form straight lines through the conductor.
33. **What happens to electric field lines when a dielectric material is placed between two charges?** a) The electric field lines bend towards the dielectric material.

b) The electric field lines remain unchanged.

c) The electric field lines move away from the dielectric material.

d) The electric field lines become more concentrated.

34. **What is the relationship between the electric field lines and the electric potential in a region of space?** a) Electric field lines are parallel to the equipotential surfaces.

    b) Electric field lines are perpendicular to the equipotential surfaces.

    c) Electric field lines are tangent to the equipotential surfaces.

    d) Electric field lines and equipotential surfaces do not interact.

35. **Electric field lines are most dense:** a) Near the surface of a charged conductor.

    b) In the center of a charged conductor.

    c) Far from any charge.

    d) Near a neutral point.

36. **What would cause electric field lines to spread out?** a) A stronger charge.

    b) A larger distance between charges.

    c) A lower electric potential.

    d) A conducting material.

37. **Which of the following correctly describes the electric field lines for a dipole along its axial line?** a) They are perpendicular to the axis.

    b) They are radial and symmetrically placed.

    c) They are parallel and equally spaced.

    d) They are stronger near the midpoint of the dipole.

38. **At the surface of a uniformly charged spherical conductor, the electric field lines:** a) Are tangential to the surface.

    b) Are directed radially outward.

    c) Are directed radially inward.

    d) Form circular loops.

39. **How do electric field lines behave when they are near two opposite charges?** a) They curve away from the charges.

    b) They move straight from one charge to the other.

    c) They bend towards both charges.

    d) They form closed loops between the charges.

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40. **Electric field lines that pass through a uniform electric field are:** a) Always parallel and evenly spaced.
    b) Radial and uniform.
    c) Curved and non-uniform.
    d) Converging towards a point.
41. **What is the shape of the electric field lines around an isolated dipole?** a) Straight lines
    b) Circular arcs
    c) Symmetric curves with a radial distribution
    d) Closed loops
42. **The electric field at a point is zero. This means that:** a) The potential at that point is zero.
    b) The charge density at that point is zero.
    c) The electric field lines are absent in that region.
    d) The electric potential at that point is constant.
43. **In the case of a dipole, the electric field lines along the equatorial plane are:** a) Radial and symmetric.
    b) Parallel and equally spaced.
    c) Perpendicular to the dipole axis.
    d) Converging at the center.
44. **Which of the following best describes the electric field lines between two parallel plate capacitors?** a) They are equally spaced and directed from the positive to the negative plate.
    b) They form curved paths around each plate.
    c) They converge toward the center of the capacitor.
    d) They are curved outward and irregular.
45. **The electric field lines around a uniformly charged sphere are:** a) Radially outward and equally spaced.
    b) Perpendicular to the surface of the sphere.
    c) Curved toward the center of the sphere.
    d) Random and unevenly distributed.
46. **When a test charge moves along the electric field lines:** a) Its potential energy remains constant.
    b) Its potential energy increases.

c) Its potential energy decreases.

d) Its speed remains constant.

47. **How do electric field lines behave in regions of high charge density?** a) They are sparse and irregular.

    b) They are closer together and more concentrated.

    c) They spread out evenly.

    d) They form circular arcs.

48. **In the electric field of a uniformly charged conductor, the electric field lines:** a) Are radial and uniformly spaced.

    b) Form closed loops inside the conductor.

    c) Are parallel to the surface of the conductor.

    d) Are perpendicular to the surface of the conductor.

49. **In the case of a uniform electric field, the potential:** a) Is constant throughout the region.

    b) Increases with distance from the source charge.

    c) Decreases with distance from the source charge.

    d) Varies quadratically with distance.

50. **If the electric field lines are closer together, it indicates that:** a) The potential is high.

    b) The electric field strength is weak.

    c) The electric field strength is strong.

    d) The field is uniform.