



DPP – 5 (Mixed JAC PYQ + High-Level Expected Questions)

A. MCQ (20 Questions)

1. Electric potential at center of charged spherical shell is: (PYQ 2023A)
(A) constant
(B) zero
(C) maximum
(D) infinite
2. Potential due to dipole = (PYQ 2023A)
(A) p/r^2
(B) p/r
(C) p/r^3
(D) pr
3. Dimensional formula of electric potential: (PYQ 2022A)
(A) $ML^2T^{-3}A^{-1}$
(B) M^0
(C) MLT^{-2}
(D) None
4. SI unit of capacitance:
(A) Farad
(B) Henry
(C) Volt
(D) Ω
5. If d halves, capacitance: (PYQ 2023A)
(A) doubles
(B) halves
(C) same
(D) becomes 4 times
6. If dielectric k inserted, C becomes: (PYQ 2014A)
(A) kC
(B) C/k
(C) C^2
(D) none
7. Dielectric constant of metal: (PYQ 2018A)
(A) infinite
(B) zero
(C) 1
(D) 2
8. Potential energy of two charges $1\mu C$ each at 1m: (PYQ 2018A)
(A) $9 \times 10^3 J$
(B) $9 \times 10^9 J$
(C) $9 \times 10^{-3} J$
(D) None

9. Equipotential surface is one where:
- (A) V constant
 - (B) E constant
 - (C) q constant
 - (D) None
10. Electric field is tangent to:
- (A) field line
 - (B) equipotential surface
 - (C) potential difference
 - (D) none
11. A conductor has:
- (A) zero potential difference
 - (B) uniform potential
 - (C) infinite energy
 - (D) none
12. For a capacitor $Q = CV$ shows:
- (A) charge proportional to V
 - (B) charge inversely proportional
 - (C) charge constant
 - (D) none
13. In parallel combination, Equivalent capacitance is:
- (A) maximum
 - (B) minimum
 - (C) same
 - (D) none
14. In series combination, charge on each capacitor is:
- (A) same
 - (B) different
 - (C) zero
 - (D) infinite
15. Capacitance depends on:
- (A) geometry
 - (B) medium
 - (C) separation
 - (D) all
16. Unit of energy density:
- (A) J/m^3
 - (B) J/C
 - (C) C/m^3
 - (D) J/m
17. When dielectric increases, electric field:
- (A) decreases
 - (B) increases
 - (C) unchanged
 - (D) becomes zero
18. Work done to charge capacitor is stored as:
- (A) electrostatic energy

- (B) heat
- (C) force
- (D) none

19. Capacitance is independent of:

- (A) charge stored
- (B) voltage applied
- (C) both
- (D) none

20. Maximum energy stored when:

- (A) V max
- (B) C max
- (C) q max
- (D) all above

B. Short Questions (5 Questions)

1. Define electric potential.
2. What is dielectric constant? (PYQ 2018A / 2014A concept)
3. Give two properties of equipotential surfaces. (PYQ 2018A)
4. Write $Q = CV$. Explain.
5. Write any two differences between series and parallel combination. (PYQ 2017 – series concept)

C. Long Questions (2 Questions)

1. Derive electric potential due to a point charge.
2. Explain series and parallel combination of capacitors with derivations. (PYQ 2017 – series concept)