CHAPTER = 9 CAPACITOR

MULTIPLE CHOICE QUESTIONS (BOOK XI)

1. The capacitance of a capacitor is NOT influenced by
   (a) Plate thickness (b) Plate area
   (c) Plate separation (d) Nature of the dielectric
2. What is the value of capacitance of a capacitor which has a voltage of 4V and has 16C of charge?
   (a) 2F **(b) 4F**
   (c) 6F (d) 8F
3. Capacitors are used in electric power supply system to:
   (a) Improve power factor (b) Reduce line current
   (c) Provide voltage stability (d) switching
4. In a variable capacitor, capacitance can be varied by:
   (a) Turning the rotatable plates in or out (b) Changing the plates
   (c) Sliding the rotatable plates (d) Changing the material of plates
5. Energy stored in the capacitor is:
   (a) E =¼CV **(b) E = ½ CV^2**
   (c) E = CV2 (d) E = ½ CV
6. The time constant of a series RC circuit consisting of 100µF capacitor in series with a 1000 Ω. resistor is.
   (a) 0.1 s (b) 0.1 ms
   (c) 0.01 s (d) 0.01 ms
7. The charging of a capacitor through a resistance follows
   (a) linear law (b) square law
   (c) exponential law (d) none of the above
8. When the total charge in a capacitor is doubled, the energy stored
   (a) remains the same **(b) is doubled**
   (c) is halved (d) is quadrupled
9. The capacitance C is charged through a resistor R. The time constant of the charging circuit is given by
   (a) $\frac{C}{R}$ (b) $\frac{1}{RC}$
   (c) $R\ C$ (d) $\frac{R}{C}$
10. Capacitor blocks:
    (a) alternating current **(b) direct current**
    (c) both alternating and direct current (d) neither alternating nor direct current

CHAPTER = 8 CAPACITOR

EXAMS PRACTICE MULTIPLE CHOICE QUESTIONS

1 The working voltage of the paper capacitors is around _____

a) 100 V to 200 V
b) 200 V to 300 V
c) 300 V to 600 V
d) 200 V to 600 V

2 How many conductors does the capacitor consist of?

a) One
b) Two
c) Three
d) Four

3 A 330 pF capacitor and a 220 pF capacitor are each connected across a 6 V dc source. The voltage across the 330 pF capacitor is

a) 3 V
b) 6 V
c) 4 V
d) 0 V

4 What is the capacitance when Q = 60 µC and V = 12 V?

a) 720 µF
b) 5 µF
c) 50 µF
d) 12 µF

5 A capacitor of 2,000 pF is greater than

a) 0.02 µF
b) 0.002 µF
c) 0.0002 µF
d) 0.0000002 F

6 Two 0.68 µF capacitors are connected in series across a 10 kHz sine wave signal source. The total capacitive reactance is

a) 46.8 Ω
b) 4.68 Ω
c) 23.41 Ω
d) 11.70 Ω

7 When the plate area of a capacitor increases,

a) The capacitance increases
b) The capacitance decreases
c) The capacitance is unaffected
d) The voltage it can withstand increases

8 The 2 µF, 4 µF, and 10 µF capacitor are connected in series. The total capacitance is less than

a) 2 µF
b) 4 µF
c) 10 µF
d) 1.5 µF

9 What is the value of capacitance of a capacitor if it has a charge of 9C and voltage of 5V?

a) 1.8F
b) 45F
c) 4.5F
d) 8.1F

10 What happens to the capacitance when a dielectric material is inserted between the plates of a parallel plate capacitor?

a) Capacitance decreases
b) Capacitance remains same
c) Capacitance increases
d) Depends upon the material of the dielectric

11 In series connection of capacitors, what happens to the charge across each capacitor?
a) Increases
b) Decreases
c) Remain the same
d) Initially increases and then decreases

12 Pick out the expression for energy stored in a capacitor from the following.
a) $U = \frac{1}{2}(CV)$ b) $U = \frac{1}{2}(Q^2V)$
c) $U = \frac{1}{2}(QV)$ d) $U = \frac{1}{2}\left(\frac{C}{V^2}\right)$

13 Initially the potential difference of a 8 μF capacitor is 30 V. Then it is changed to 40 V. What is the increase in energy?
a) 28×10^{-4} J b) 18×10^{-4} J
c) 8×10^{-4} J d) 24×10^{-4} J

14 A parallel plate capacitor with capacitance C has plates of area A and separation d. if the area of the plate is increased to 2A and separation reduce to d/2, then the capacitance will be.
a) 2 C b) 4 C
c) C/4 d) C

15 A 0.25 microfarad capacitor is connected to a 400 V battery. What potential energy is stored in the capacitor?
a) 1.2×10^{-12} J b) 1.0×10^{-4} J
c) 0.040 J **d) 0.020 J**

16. Two capacitors with capacitances of 1.0 and 0.5 microfarads, respectively, are connected in parallel. The system is connected to a 100 V battery. What charge accumulates on the 1.0 microfarad capacitor?
a) 150 micro coulomb **b) 100 micro coulomb**
c) 50 micro coulomb d) 33 micro coulomb

17. Three capacitors each of capacity 4 μ F are to be connected in such a way that the effective capacitance 6 μ F. This can be done by:
a) Connected all of them in a series
b) Connected all of them in a parallel
c) Connected two in series and one in parallel
d) Connected two in parallel and one in series

18 The unit of capacitance, the farad, is dimensionally equivalent to which of the following?
a) Volt / coulomb b) volt × coulomb
c) joule / volt **d) coulomb / volt**

19. Inserting a dielectric material between two charged parallel conducting plates, originally separated by air and disconnected from a battery, will produce what effect on the capacitor?
a) Increase charge b) increase voltage
c) increase capacitance d) decrease capacitance

20. Increasing the separation of the two charged parallel plates of a capacitor which are disconnected from a battery will produce what effect on the capacitor?
a) charge remain same b) increase charge
c) increase capacitance **d) decrease capacitance**

21 Increasing the voltage across the two plates of a capacitor will produce what effect on the capacitor?

a) charge remains same
b) decrease charge
c) increase capacitance
d) decrease capacitance

22. If three capacitors of values 1.0, 1.5, and 2.0 microfarads each are connected in series, what is the combined capacitance?

a) 4.5 microfarads
b) 4.0 microfarads
c) 2.17 microfarads
d) 0.46 microfarads

23 If three capacitors of values 1.0, 1.5, and 2.0 microfarads each are connected in parallel, what is the combined capacitance?

a) 4.5 microfarads
b) 4.0 microfarads
c) 2.17 microfarads
d) 0.46 microfarads

24. Two capacitors with capacitances of 1.0 and 0.5 microfarads, respectively, are connected in parallel. The system is connected to a 100 V battery. What charge accumulates on the 0.5 microfarad capacitor?

a) 150 micro coulomb
b) 100 micro coulomb
c) 50 micro coulomb
d) 33 micro coulomb

25 When the voltage across a capacitor is duble, the stored charge

a) Triples
b) Is cut to one-third
c) Stays the same
d) Doubles