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STUDY CENTRE, PALA

KEAM 2026


20-04-2026



VIDEO SOLUTION

SCAN ME

MEMORY BASED QUESTIONS

- Which among the following has least pK_b value?
A) Methanamine
B) Ethanamine
C) N-ethylethanamine
D) N,N-diethylmethanamine
- Find the order of metallic radius of
Mg, Li, Be, B, Al
- Find the order of field strength
 CN^- , SCN^- , NCS , S^{2-} , OH^-
- IUPAC name $[CoCl_2(en)_2]Cl$
- Find the mass of an organic compound of molar mass 84, required to prepare 250 ml solution of molarity 0.4
- An organic compound (X) on reductive ozonolysis gave 1 mole of propanal-pent-3-one. Name the organic compound X.
- Velocity of 1st orbit of hydrogen according to Bohr theory 'v', then what is the velocity of 3rd orbit of hydrogen
- What are possible structural isomers of $C_3H_6Cl_2$
- Find the order of magnitude of electrode potential ($E_{M^{2+}/M}^0$) of
Cr, V, Mn, Fe, Co
- product of aldol condensation is 1,3-diphenyl pro-3-ene-1-one, then its reactants are
- 

11. c1ccccc1CCl \xrightarrow{KCN} (A) $\xrightarrow{H_2/Ni}$ B
- Which metal added in fuel cell to make it more efficient?
- Total no. of electron present around the central atom in order of PCl_5 , SF_6 , SCl_2

1. $\int_{-\pi/3}^{\pi/3} \frac{\sqrt{\sin x}}{\sqrt{\sin x} + \sqrt{\cos x}} dx$

2. $\int \tan \frac{\theta}{2} \sin \theta \cos \theta d\theta$

3. $i^2 = -1$. then $i^2 + i^3 + i^4 + \dots + i^{2026}$

4. If A is a square matrix then which of the following is true

- 1) $A + A^T$ is symmetric and $A - A^T$ is skew symmetric
- 2) $A + A^T$ is skew symmetric and $A - A^T$ is symmetric
- 3) $A + A^T$ and $A - A^T$ are symmetric
- 4) $A + A^T$ and $A - A^T$ are skew symmetric

5. $\int \frac{1}{(1+x^2) \left[\tan^{-1} \left(\frac{1+x}{1-x} \right) \right]} dx$

6. Find the equation of the straight line passing through the point $(-1, 6, 5)$ and $(-2, 4, 3)$

7. Solve the differential equation $(2y - 1)dy - (y - 2) dx = 0$

8. $\lim_{x \rightarrow 0} \frac{\sin|x|}{z}$

9. $\int \frac{1}{1+e^t} dt$

10. $\int e^x (2e^x + \sin x + \cos x + 2) dx$

11. $\int \frac{y^2 - 3y + 2}{y^2 + y} dy$

12. $\int_6^5 \frac{(x+8)^{2026}}{(x+8)^{2026} + (13-x)^{2026}} dx$

13.

14. $\left| \frac{\cos \alpha + i \sin \alpha}{\sin \alpha - i \cos \alpha} \right|^{1000} + \left| \frac{\sin \alpha + i \cos \alpha}{\cos \alpha - i \sin \alpha} \right|^{2000}$

15. If ${}^n P_5 = 6720$ and ${}^{n-1} P_4 = 840$ then ${}^{-n} P_3 = ?$

26. The number of positive integers upto 100 which are divisibly by 3 or 7 but not by both.

27. The value of $\cos^{-1}\left(\cos\frac{5\pi}{9}\cdot\cos\frac{\pi}{9} + \sin\frac{5\pi}{9}\times\sin\frac{\pi}{9}\right)$

28. Domain of $f(x) = \sin^{-1}(5 - 4x^2) + \cos^{-1}(5 - 4x^2)$

29. If $|f(x_1)| - |f(x_2)| \leq (x_1 - x_2)^2$, $x_1, x_2 \in \mathbb{R}$ and if $f(0) = 2026$ then $f(2025) =$

30. Let a_1, a_2, a_3, a_4 are in G.P, then the value of $(6a_1 + 6a_2 + a_1a_4 + a_2a_4)^2$ is

31. If ${}^nC_4 = 1365$ then $n =$

32. $\int_0^1 \frac{x^{15}}{1+x^{32}} \left[\cos(\tan^{-1} x^{16}) \right] dx$

33. $z_1 = 1 + 3i, z_2 = -3i + 5$ then $(z_1\bar{z}_2 + z_2\bar{z}_1) + (z_1\bar{z}_2 + z_2\bar{z}_1)$ is equal to

34. $\lim_{x \rightarrow \frac{\pi}{2}} (\tan x - \sec x) =$

35. $\int_{-4}^4 (x - [x]) dx$

36. Let $f(x) = \frac{2025x + 2026}{2027x - 2025}$, $x \in \mathbb{R}$, $x \neq \frac{2025}{2027}$ be a function. Then $f^{1000}(100)$

where $f^2(x) = f(f(x))$ is equal to

37. Let O be the origin and R be any point on $y^2 = 2x$. The locus of the midpoint of the line segment OR is

38. Let the eccentricity of an ellipse be $\frac{1}{2}$. If $S(3, 2)$ is a focus and $x - 9 = 0$ is the corresponding directrix of the ellipse. Find equation of ellipse?

39. The order and degree of the differential equation $\left(1 + \frac{dy}{dx} + \frac{d^2y}{dx^2}\right)^{\frac{3}{2}} = \left(x + y + \frac{dy}{dx} + \frac{d^3y}{dx^3}\right)^{\frac{2}{3}}$

40. Let $f(x) = -\sqrt{49 - x^2}$, then $\lim_{x \rightarrow 1} \frac{f(x) - f(1)}{x - 1}$ is equal to

41. Consider the data x_1, x_2, \dots, x_{10} . If $\sum_{i=1}^{10} (x_i - \bar{x})^2 = 662$ find standard deviation.

42. A straight line has y-intercept -5 . If it makes 120° with the x-axis then the equation of the line is

43. Value of $\sin 5^\circ \times \sin 10^\circ \times \sin 15^\circ \times \sin 20^\circ \times \dots \times \sin 240^\circ$

44. The value of the determinant $\begin{vmatrix} (10^5 + 10^{-5})^2 & (10^5 - 10^{-5})^2 & 1 \\ (100^6 + 100^{-6})^2 & (100^6 - 100^{-6})^2 & 1 \\ (6^{100} + 6^{-100})^2 & (6^{100} - 6^{-100})^2 & 1 \end{vmatrix} =$

45. Given that $p^2 = -1$, if $z_1 = (7 + i\sqrt{5})^2 + (7 - i\sqrt{5})^2$ and $z_2 = (3 + 2i)^3 - (3 - 2i)^3$ then

1) z_1 is a purely imaginary number and z_2 is purely real no.

2) z_1 is a purely real number and z_2 is a purely imaginary

3) both z_1 and z_2 purely real

4) both z_1 and z_2 purely imaginary

An object is placed at a distance of 30 cm from a convex lens of focal length 100 cm when it moves 5 cm towards the lens how much is the image being shifted?

If a magnet is cut into equal halves perpendicularly. What happens to magnetic moment?

- A) M B) $\frac{M}{2}$ C) $\frac{M}{3}$ D) $\frac{3M}{2}$

In vertical circular motion, what is the minimum velocity at the lowest point?

Two cars A and B are starts moving from rest. Car A travels at a constant velocity of 2 m/s and car B moving with a constant acceleration of 4 m/s². After how much time B will overtake A?

- A) 5 s B) 10 s C) 15 s D) 20 s
E) 25 s

For pure semiconductor

- A) No. of electrons = number of holes
B) No. of electrons > number of holes
C) No. of electrons < number of holes
D) None of these

A nucleus has a mass number of 56 and a binding energy per nucleon of 8.8 MeV, the total B.E is?

When an iron ball is moving through a fluid, its terminal velocity is proportional to

- A) r² B) $\frac{1}{r}$ C) r⁻² D) \sqrt{r}

The position of a particle is given by $x = at + bt^{3/2}$ where a and b are constants and t is the time.

Then dimension of $\frac{b}{a}$ is?

When a ball of mass 2.2 kg collides with a wall with a speed of 10 m/s and rebounds with a speed of 8 m/s. Find impulse.

A particle is subjected to a force $F = 3x^2$. Calculate the work done in moving with particle from $x=0$ to $x = 2$ m.

- A) 12 J B) 8 J C) 16 J

If m and 2m are two masses separated by a distance of 1 m are attracted by gravitational force. Then the acceleration of their centre of mass is?

Stopping potential is given by 1.8 eV, then what will be the maximum kinetic energy of photoelectrons?

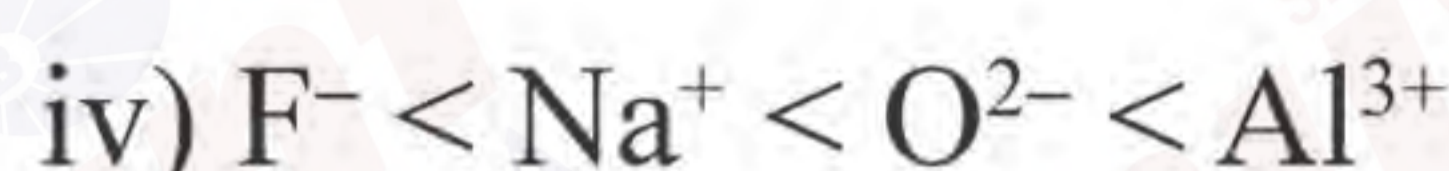
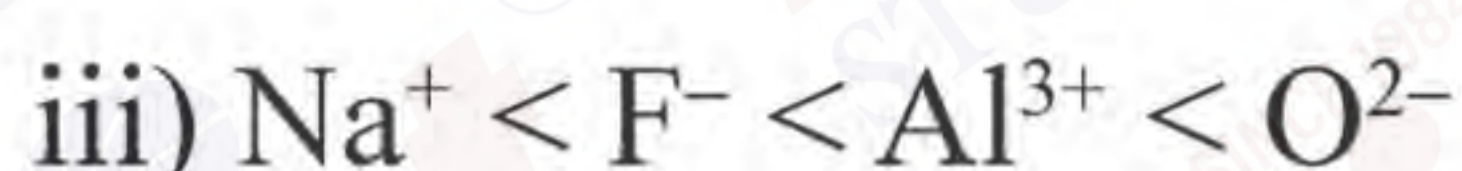
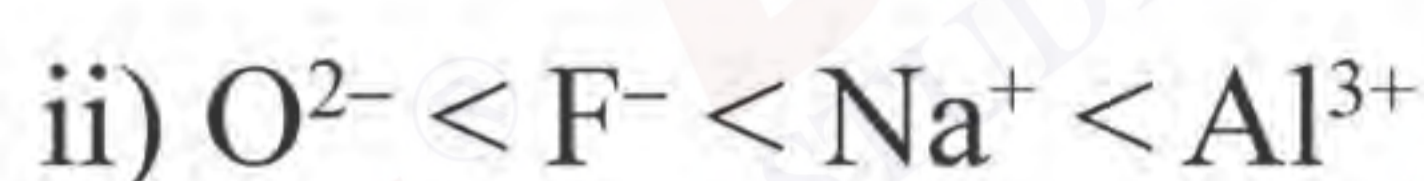
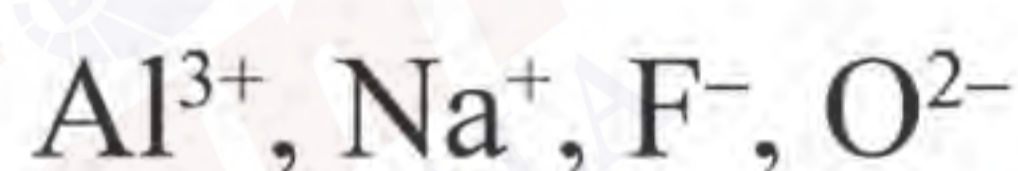
Capacitance of an air filled parallel plate capacitor is C. Find capacitance when a dielectric of dielectric constant K is field in it.

Find new resistivity when radius doubles and length reduces by half of its original resistivity is ρ .

- A) halved B) unchanged C) doubled D) tripled
E) quadrupled

15. In v-t graph, if graph cuts time axis what does it indicate?
16. If a conductor of length 1 m carrying a current of 2 A is placed in a field of 0.2 T. What will be the force acting on it?
17. 2A of current is flowing through a wire of length 1 m. What is the amount of charge passing through it in 1 min?
A) 120 C B) 40 C C) 1 C D) 2C
E) 10 C
18. Find the ratio of moment of inertia of ring to disc, about an axis passing through its centre?
A) 1 : 2 B) 2 : 1 C) 3 : 2 D) 2 : 3
E) 1 : 1
19. Light of wavelength 500 nm falls on a single slit of width 0.1 mm. Angular position of 1st minimum is
A) $\sin^{-1}(0.05)$ B) $\sin^{-1}(0.2)$ C) $\sin^{-1}(0.5)$ D) $\sin^{-1}(0.0025)$
E) $\sin^{-1}(0.005)$
20. A particle executes SHM with time period T. If acceleration is doubled keeping amplitudes constant, new time period is
A) T B) $\frac{T}{2}$ C) 2T D) $\frac{T}{\sqrt{2}}$
E) $\sqrt{2} T$
21. Electric flux through a closed surface depends on
A) Area of flux B) Volume C) Charge enclosed D) Shape
E) Electric field outside it
22. Angular velocity of geostationary satellite is (in rad hr⁻¹).
A) $\frac{\pi}{365}$ B) $\frac{\pi}{24}$ C) $\frac{\pi}{12}$ D) $\frac{\pi}{18}$
23. In an AC circuit, $R = 2\pi^2\Omega$, $L = 0.02\pi H$ and is powered by an AC voltage of frequency 50 Hz. Find impedance of the circuit ?
24. Find velocity of em wave in terms of C if $\epsilon_r = 4$ and $\mu_r = 1$.
A) C B) $\frac{C}{2}$ C) 2C D) $\frac{C}{3}$
E) $\frac{C}{4}$
25. Water is flowing through a tube of radius r at constant velocity with power P. What happens to power when radius of the tube doubled?
26. Pressure of liquid inside a vessel depends on?

1. Arrange the isoelectronic species in increasing order of ionic radius:



2. Which among the following is most basic in aqueous medium

i) Benzenamine

ii) N-ethylethanamine

iii) N,N-diethylethanamine

iv) Methylamine

3. Which of the following lanthanoid ion is coloured?

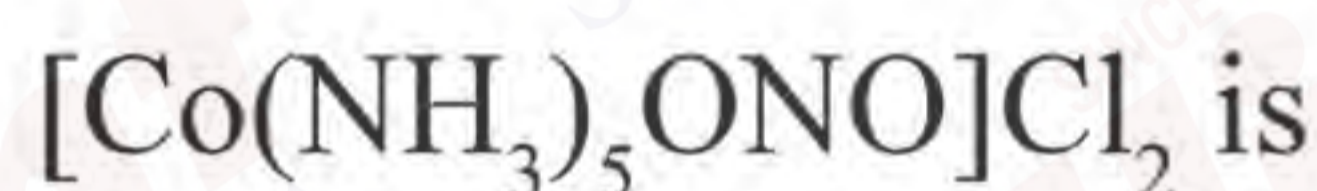
A) Lu^{3+}

B) Sm^{2+}

C) Yb^{2+}

D) La^{3+}

4. IUPAC name of the compound



5. Oxidation state of oxygen in H_2O_2

6. Formula of Hinsberg reagent?



7. Find the bond length of O – H in methanol

A) 96 pm

B) 141 pm

C) 136 pm

D) 145 pm

E) 86 pm

8. Match the following

| Compound | Stock notation of oxidation number |
|----------------------------|------------------------------------|
| a) MnO | i) III |
| b) Mn_2O | ii) II |
| c) MnO_2 | iii) IV |
| d) Fe_2O_3 | iv) I |

A) a-i, b-ii, c-iii, d-iv

B) a-ii, b-iv, c-iii, d-i

C) a-ii, b-i, c-iii, d-iv

D) a-i, b-ii, c-iv, d-iii

9. Which among the following elements shows same atomic radius?

A) Mo & W

B) Ti & La

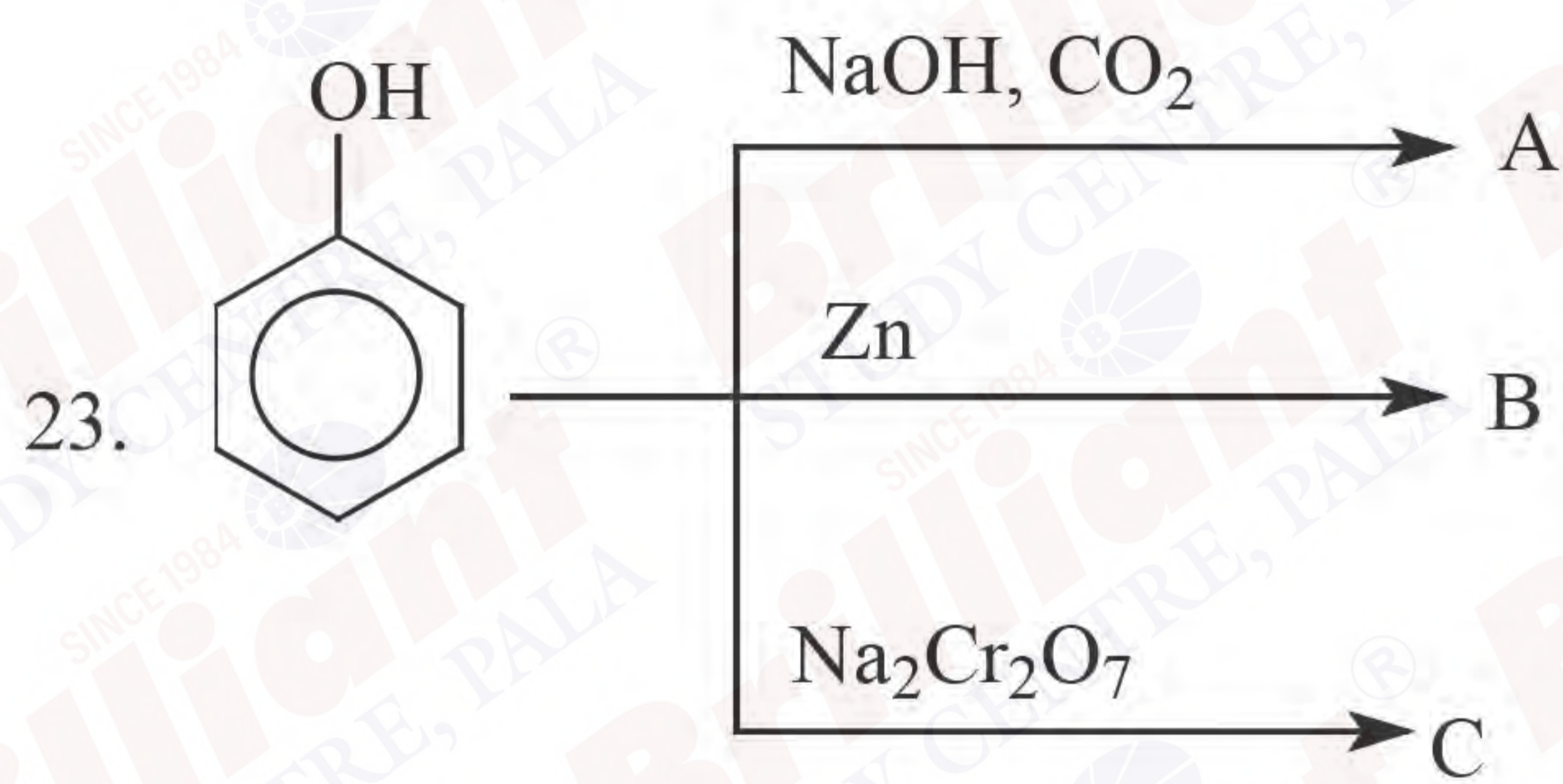
C) Ag & Ni

D) Mn & S

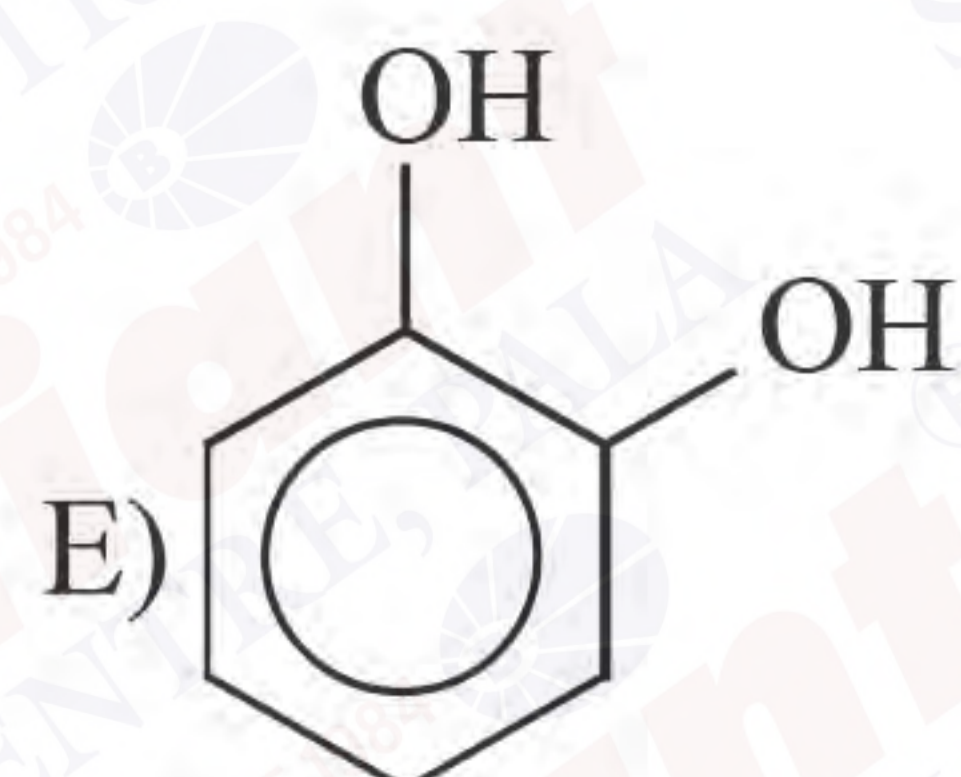
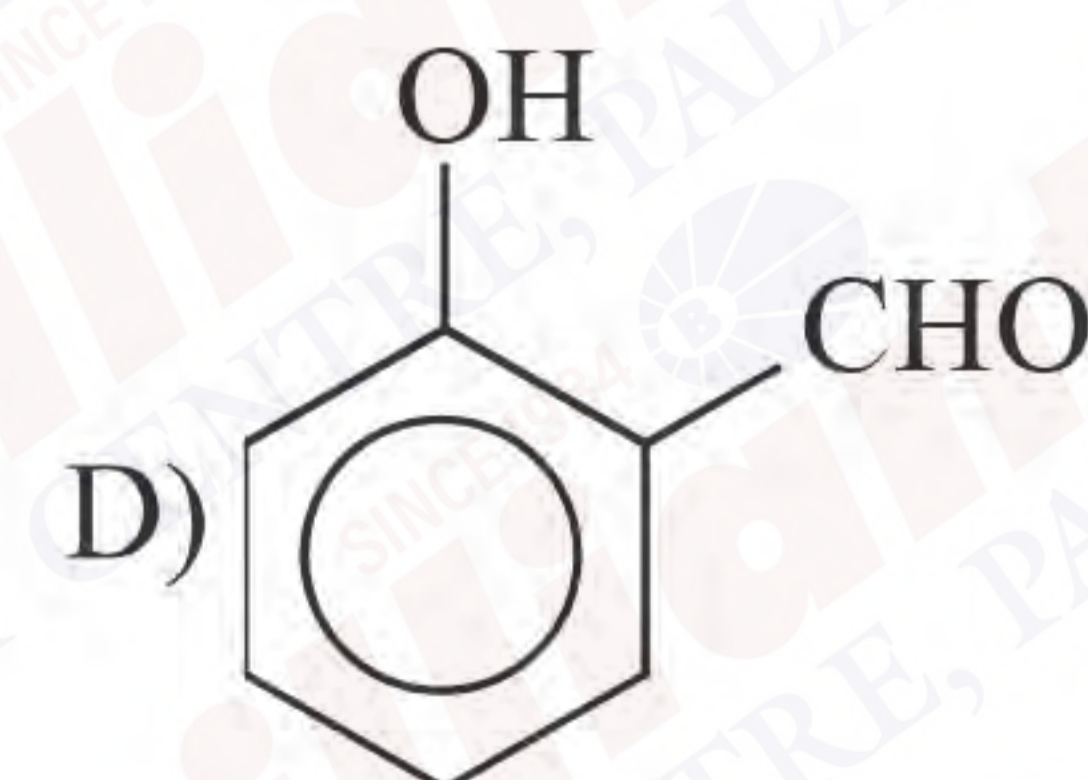
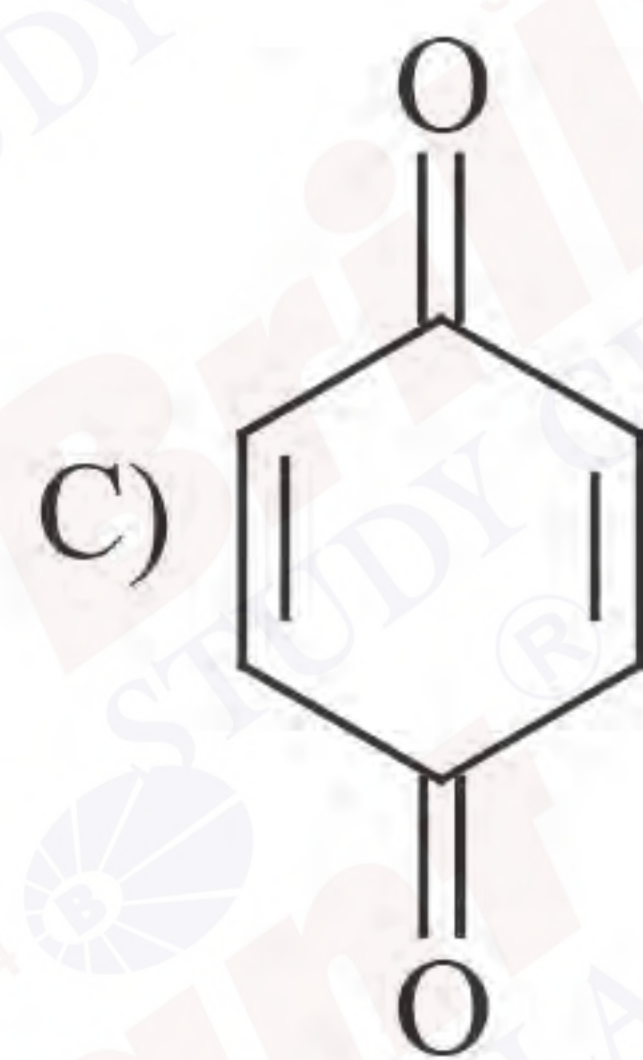
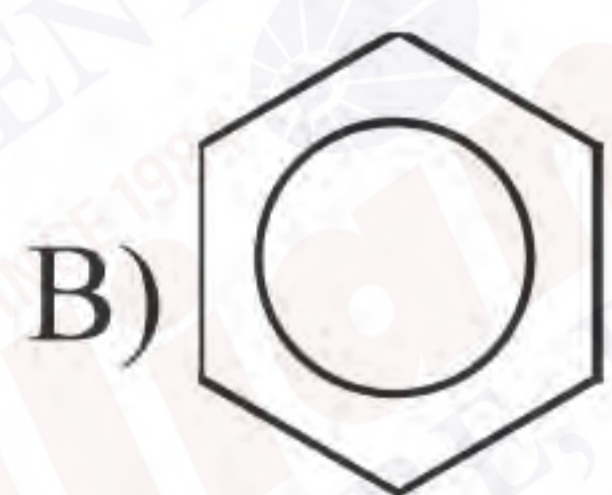
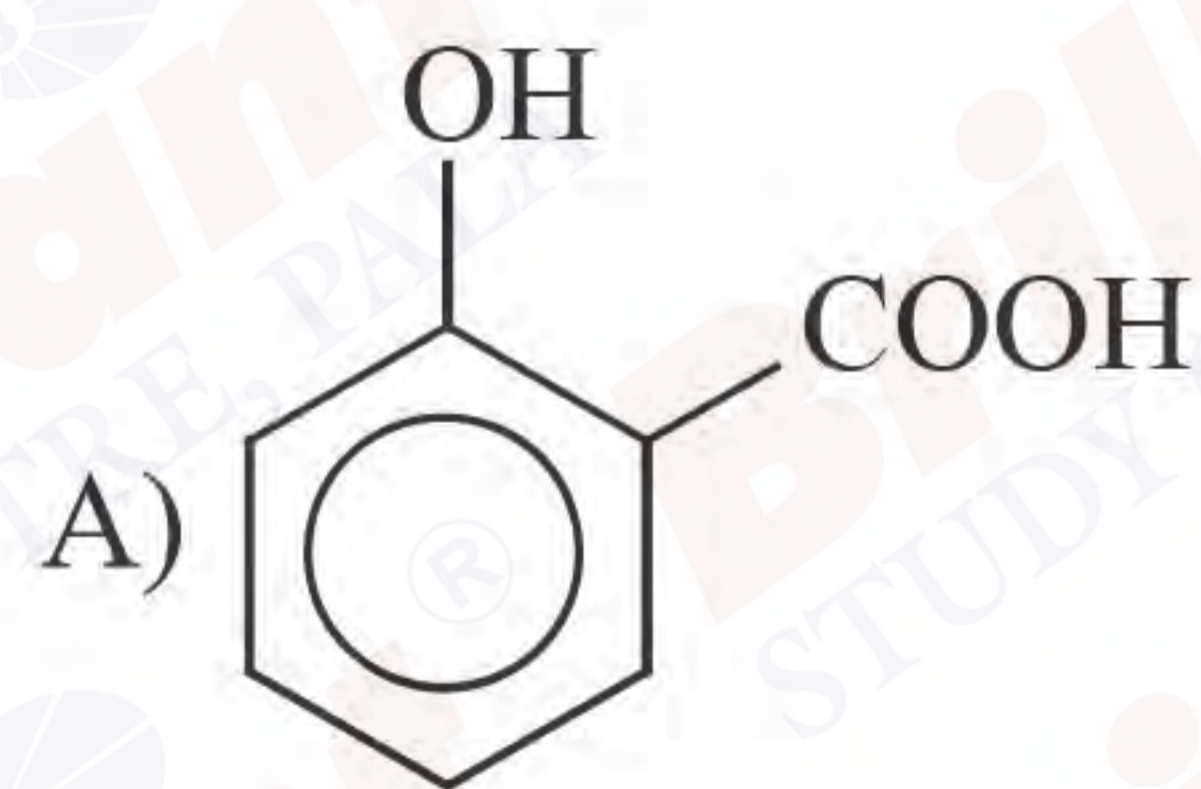
E) U & W

10. Which of the following yields Tarry product during oxidation:
- A) oxidation of aniline by nitric acid (Nitration of aniline)
 - B) Sulphonation of aniline
 - C) Bromination of aniline
 - D) Friedal craft alkylation of aniline
 - E) Friedal craft acylation of aniline
11. Which of the following has Van't Hoff factor (i) 1.82?
(m = 0.01)
- A) K_2SO_4
 - B) $MgSO_4$
 - C) NaCl
 - D) HCl
 - E) KCl
12. Find the % of composition of carbon in methane:
- A) 25%
 - B) 75%
 - C) 20%
 - D) 80%
 - E) 90%
13. For a reaction $N_2 + O_2 \rightleftharpoons 2NO$. Given that $[N_2] = 2 \times 10^{-3}$, $[O_2] = 3 \times 10^{-3}$, $[NO] = 6 \times 10^{-6}$
Find the value of K_c for the reaction
14. Find the rate constant of a first order reaction $A \rightarrow B$ reaction where $t_{1/2} = 10$ minutes at 300 K is
(Given $\log 2 = 0.3$)
- A) $1.15 \times 10^{-1} s^{-1}$
 - B) $1.15 \times 10^{-3} s^{-1}$
 - C) $2.15 \times 10^{-1} s^{-1}$
 - D) $2.15 \times 10^{-3} s^{-1}$
15. Which of the following orbitals donot have 4 lobes?
- A) d_{xy}
 - B) d_{xz}
 - C) d_{zy}
 - D) $d_{x^2-y^2}$
 - E) d_{z^2}
16. For a 1st order reaction, 99% complete in 20 minutes, then the $t_{1/2}$ will be : ($\log 2 = 0.3$)
- A) 10 min
 - B) 5 min
 - C) 3 min
 - D) 2 min
17. IUPAC official name for the element shows atomic number 110?
- A) Darmstadtium
 - B) Roentgenium
 - C) Meitnerium
 - D) Copernicium
 - E) Nihonium
18. When sodium fusion extract of a compound is boiled with Iron (II)sulphate and then acidified with conc.sulphuric acid blood red colour is produced. The compound is _____?
- A) NH_2CONH_2
 - B) $C_6H_5NH_2$
 - C) $C_6H_5SO_3H$
 - D) $H_2N-C_6H_4-SO_3H$

19. 1-phenyl-2-chlorobutane on reaction with EtOH/EtOK produces a product which on treatment with HBr produces
20. For chemical reaction $M \rightarrow N$, the rate becomes 8 times when the concentration of M doubles, find the order of reaction with respect to M?
- A) 0 B) 1 C) 2 D) 3
21. Which of the following is insoluble in water
- A) Amylose B) Sucrose
 C) Glucose D) Amylopectin E) Maltose
22. Which is incorrect regarding Bohr model?
- A) Applicable to 1 electron system
 B) Applicable to multielectron system
 C) Electrons revolve in non-radiating orbits
 D) Angular momentum is quantised



Find A, B, C



1. A Bar magnet has a magnetic moment M and length l . If its length is reduced to half, find its new magnetic moment.
2. What is the ratio of Debroglie wavelenght of proton and neutron if kinetic energy is same for both
3. A 250W bulb emit light of wavelength 19.6nm. Find the no of electron emitted per second
4. Find difference in work function of two different metal if their stopping potential are 0.4V and 1.6V respectively.(metals are illuminated with photons of same energy)
5. An α particle and proton are accelerated in cyclotron under idential conditions. Find the ratio of their cyclotron frequency
6. Two springs with constants k and $2k$ are connected in series and a mass m is hanged. The time period of oscillation is
7. An oil drop of charge q and mass m is in equilibrium in an electric field E . The charge of the oil drop is
 - 1) $q = \frac{mg}{E}$
 - 2) $q = \frac{E}{mg}$
 - 3) $q = \frac{mg}{2E}$
 - 4) $q = \frac{mg}{4E}$
8. displacement of particle is given by $x = t^3 + 2$, find time at which velocity becomes zero
9. Time period of particle is $T = k\sqrt{\frac{\rho}{\sigma}}$ if $k \rightarrow$ dimensionless constant, ρ - density, r - radius, dimension of σ is same as
 - 1) surface tension
 - 2) restoring force
 - 3) coefficient of viscosity
10. If two objects of mass $m_1 = 80g$ and $m_2 = 120g$ moves with same speed 6cm/s, find the velocity of centre of mass
11. An object of mass m is placed in a lift moving upward with acceleration $\frac{g}{2}$. Find apparant weight.
12. If temperature is constant and the electric field is doubled then the drift velocity of electrons in a conductor.
 - 1) doubled
 - 2) remains the same
 - 3) halved
 - 4) quadraupled
13. If wavelength of light and separation between slit and screen are fixed. If the slit width is halved, then the angular width become
14. Energy of radiation incident on a perfect absorbing surface per unit are in unit time is 3.6J. The radiation pressure is:
15. 64 identical spheres each having charge q coalesce to form one big sphere. Find the ratio of the surface charge density of the big sphere to that of small sphere
16. Two identical cells having internal resistance 1Ω and emf 6v and 2v are connected in series with external resistance 4Ω , find current throught external resistance
17. A brass of length 1m is heated throught a temperature rise of $50^\circ C$. Find thermal stress developed in the rod
($\alpha = 2 \times 10^{-5} 0c^{-1}$, $Y = 1 \times 10^{11} N / m^2$)