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STUDY CENTRE, PALA

KEAM 2025 SHIFT-1



SCAN ME

VIDEO SOLUTION

MEMORY BASED QUESTIONS

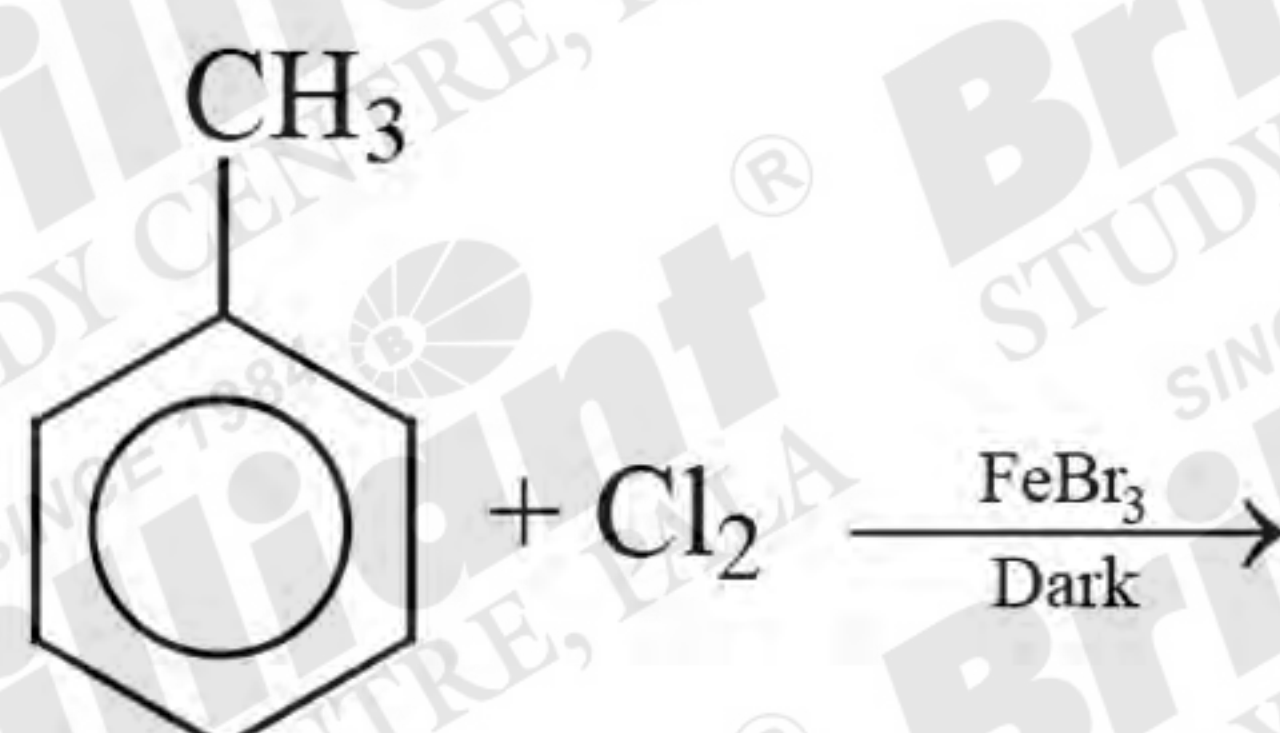
1. The dimension of (decay constant $\times$ mean time)
2. The power dissipated by a particle with constant force and constant acceleration is proportional to
A) t B) $t^{1/2}$ C) $t^{3/2}$
3. The ratio of frequencies of closed to open pipe for 3rd mode of vibration
4. 3 capacitors of capacitance $12\mu\text{F}$ each is connected in series. If the voltage is 12V , what is the charge drawn from the cell
A) $78\mu\text{F}$ B) $36\mu\text{F}$
5. If $B = 400\sqrt{2} \sin(\omega t - kx)$ and find the peak value of the magnetic field of electromagnetic wave ?
6. Which of the following is incorrect ?
A) Current is a scalar quantity
B) Current density is a vector quantity
C) Conductivity is the reciprocal of resistivity
D) Ohm's law asserts that the graph plotted I v/s V is a straight line
7. Band gap energy of Si
A) 1.1eV B) 0.7eV C) 0.3eV
8. If fringe width obtained in a YDSE is 1.3mm . If the whole system is dipped in a liquid of refractive index 1.3 , then the new fringe width will be
9. If a bar magnet is doped into a circular ring placed horizontally, then what change will happen ?
A) Its acceleration will be less than g
B) Its acceleration will be more than g
C) No change

10. If $\frac{C_p}{C_v}$ is unity for a process, $PV^{\gamma} = \text{constant}$, then the process is
A) Adiabatic B) Isothermal C) Isobaric D) Isochoric
11. To have the same rms value as that of hydrogen at 30K, what will be the temperature of the oxygen molecule ?
12. The ratio of frequency 3rd mode of vibration for the closed organ pipe and the open pipe of same length
13. Which is correct about cathode rays ?
A) $\frac{e}{m}$ does not depend on the nature of the gas filled
B) mass does not depend on the nature of the gas filled
C) They are +vely charged particles
14. Acceleration of the freely falling metal rod in cyclotron ring
15. Weight loss feeling in lift during _____
16. Three forces are acting on a particle in which F_1 and F_2 are perpendicular. If F_3 is removed, find the acceleration of the particle.
17. Work done by battery is 10J to move a charge of 5C. Find the terminal potential difference
18. What is the work done to stretch a string ?
A) $\frac{1}{2} \times \text{load} \times \text{strain}$ B) $\text{load} \times \text{strain}$
C) $Y \times \text{strain}$
19. Find the pressure on an air bubble of radius r at a height h from the surface of the water
20. What is the path followed by a charge entering a uniform magnetic field with its initial velocity along the direction of the magnetic field ?
21. What is the angle between the current and the magnetic field is a conductor carrying 2A current placed in a magnetic field of 4T experiences a force of 10N ?
22. A bar magnet is dropped through a circular conducting ring. What is the acceleration of the magnet as it leaves the ring ?
A) $a > g$ B) $a < g$ C) $a = g$
23. An element of atomic number Z emits an alpha particle, what is its new atomic number ?
24. An atom is excited by a radiation of energy 12.75eV. What is the number of spectral lines in the resulting spectrum ?

1. An equiconvex lens of power P is cut perpendicular to its principal axis, into 2 equal parts, power of each part ?
2. Two point masses m and $4m$ are separated by a distance d . Find the point where the gravitational field is zero
3. When body is dropped from height H , the time taken to reach the ground is T . What is the time taken to reach height $H/2$ from the ground ?
4. What is the ratio of radius of gyration of ring and disc ?
5. A particle of mass $1.2 \times 10^{-19} \text{g}$ moves with velocity $V = 3 \times 10^4 \text{ m/s}$. What is the de-Broglie wavelength ?
6. When blue light is incident on metal surface, photoelectrons are emitted. When green light is incident, no photoelectrons are emitted. What is the number of photoelectrons emitted when yellow light is incident ?
7. Which of the following is true in an SHM ?
 - A) PE is maximum at $x = 0$
 - B) KE is maximum at $x = 0$
 - C) PE is minimum at $x = A$
 - D) KE is minimum at $x = 0$
8. A $-q$ charge is placed at a distance x from a conducting plane. The field lines on the opposite side of the plate is
9. A shell in projectile motion explodes while in motion, what is the trajectory of centre of mass of the fragments ?
10. Which of the following statement is incorrect ?
 - A) Work done in uniform circular motion is zero
 - B) Work done in stretching a spring is positive
 - C) Work done on a freely falling body is positive
 - D) Work done depends on time taken

- Aspirin is also called
 - Methylsalicylate
 - Ethyl salicylate
 - Acetylsalicylate
 - Acetylsalicylic acid
 - None of these
- The pK_a value of 0.1 M solution of a weak acid HA with pH = 3 is
- Name of the following reaction is Benzaldehyde + Acetophenone → Benzalacetophenone
 - Cannizzaro's reaction
 - Aldol condensation
 - Reimer-Tiemann reaction
 - Gattermann reaction
 - None of the above
- IUPAC name of the hydrocarbon C₂₀H₄₂ is
- Which of the following has an expanded octet?
 - NH₃
 - H₂SO₄
 - SF₄
 - BeCl₂
 - LiH
- Which of the following aminoacids are synthesised in our body?
 - Proline
 - Valine
 - Histidine
 - Arginine
 - Leucine
- Which of the following has smallest ionic radius?
 - Sc³⁺
 - Ti³⁺
 - V³⁺
 - Cr³⁺
 - Mn³⁺

8. Identify the product of the reaction



9. Which of the following is more soluble in water at 298 K?
- A) HCHO B) Vinylchloride C) Argon D) CO₂ E) None of the above
10. Which of the following shows -R effect?
- A) -CN B) -OCOCH₃ C) OCH₃ D) -Cl E) -OH
11. What are main group elements?
- A) p-block elements B) s-block elements
C) s and p-block elements D) d-block elements
12. Matrix match
- | | |
|------------------------------|-------------|
| i) Non reducing disaccharide | a) Fructose |
| ii) Reducing disaccharide | b) Glucose |
| iii) Aldohexose | c) Sucrose |
| iv) Ketohexose | d) Lactose |
| v) Polysaccharide | e) Maltose |
13. Acetanilide is prepared by reacting and
14. Phenol can be converted into benzene by treating with
- A) Zn dust B) Na-Hg C) LiAlH₄ D) NaBH₄
15. Which of the following is colourless?
- A) Ti⁴⁺ B) Fe³⁺ C) Fe²⁺
16. The amount of NaOH required to neutralize 9.8g H₂SO₄ is
17. ΔH and ΔS value of a reaction which is non-spontaneous at high T and spontaneous at low T is and
18. Aryl halides react with Na in dry ether gives diphenyls. Name of the reaction is
19. Amount of charge required to dissociate

- Which of the following is low spin complexes? Cl_2
 $[\text{Co}(\text{NH}_3)_6]^{3+}$, $[\text{Ni}(\text{CO})_4]$, $[\text{Ni}(\text{CN})_4]^{2-}$
- Order of acidity
 $\text{F}-\text{CH}_2-\text{COOH}$, $\text{Cl}_2-\text{CH}_2-\text{COOH}$, $\text{Cl}-\text{CH}_2-\text{COOH}$, $\text{CN}-\text{COOH}$, $\text{CN}-\text{CH}_2-\text{COOH}$
- Order of acidity $\text{CH}\equiv\text{CH}$, $\text{CH}_3-\text{C}\equiv\text{CH}$, $\text{CH}_3-\text{C}\equiv\text{C}-\text{CH}_3$
- Spin free complex?
- Preparation of KMnO_4 from $\text{Mg}(\text{II})$
- An element undergoes α -decay, its shift in position in periodic table by units towards?
- Which does not react with Hinsberg reagent?
N-methyl amine, N-N dimethyl amine
- Which has intramolecular hydrogen bonding?
Ortho nitrophenol, Para nitrophenol
- Carboxylic acid which is widely used in leather industry is
1) Methanoic acid 2) Ethanoic acid
3) Propanoic acid 4) Butanoic acid
- Properties of canal rays
- Which shows +6 oxidation state in fluorides?
1) Mn 2) Cr 3) V 4) Co
- Energy of H atom in ground state is 13.6 eV. No of spectral lines emitted by 'H' atom when a photon of energy 12.75 eV is received?
- Metal in Wilkinson's catalyst
- For H_2SO_4 used catalyst is
- A sub atomic particle of mass 2.2×10^{-28} Kg. Velocity = $3 \times 10^5 \text{ ms}^{-1}$. Debroglie wavelength
- Highest limiting conductance at 298 K
1) Ca^+ 2) Cs^+ 3) K^+ 4) Na^+

17. Which is tetrahedral

- 1) NH_4^+ 2) BeCl_2 3) SCl_2

18. When n-heptane is treated with Mo_2O_3 catalyst gives

- 1) Benzene 2) Ethane 3) Toluene

19. Amount of charge required to dissociate MgCl_2

20. Which of the following is exothermic reaction

- a) enthalpy of sublimation b) enthalpy of combustion
c) enthalpy of vapourisation

21. $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Br}$, $[\text{Co}(\text{NH}_3)_5\text{Br}]\text{SO}_4$ shows which type of isomerism?