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STUDY CENTRE, PALA

KEAM 2026

18-04-2026

SCAN ME

VIDEO SOLUTION

MEMORY BASED QUESTIONS

1. The following compound shows $[Co(NH_3)6][Cr(H_2O)_6]$

$[Co(H_2O)6][Cr(NH_3)_6]$

A) Geometrical Isomerism
B) Coordination Isomerism
C) Linkage Isomerism
D) Ionization Isomerism

2. P-bromophenol is obtained by the treatment of phenol with .....

A) Br_2 in CS_2 at 273k
B) Br_2 in acetone
C) Br_2 in Acetic acid
D) Bromic water

3. $CH_3Cl + NaI \rightarrow CH_3I + NaCl$ name of the reaction and solvently used?

A) Finkelstein reaction, Dry acetone
B) Swartz reaction, water
C) Riemer Tiemann reaction, ethanol
D) Kannizzaro reaction, acetone
E) Aldol condensation, Aq. NaOH

4. Which among the following for the lowest pK_6 value on non-polar medium?

A) CH_3NH_2
B) $(CH_3)_2NH$
C) $(CH_3)_3$ N
D) $CH_3CH_2NH_2$
E) $C_6H_5NH_2$

5. Which of the following gives a positive carbylamine test

A) $(CH_3)_2$ NH
B) $CH_3-CH(CH_3)-NH_2$
C) $(CH_3)_3-N$
D) $C_6H_5-NH-CH_3$
E) $C_6H_5N-(CH_3)_2$

6. $CH_3CH_2OH + PCl_3 \rightarrow CH_3CH_2Cl + (X)$

Find the product 'X'

A) PH_3 B) H_3PO_3 C) P_2O_5

D) $POCl_3$ E) H_3PO_4

7. The correct order of first ionization enthalpy of C, N, O, F

A) $C < O < N < F$ B) $N < F < O < C$

C) $N < O < F < C$ D) $C > O > N > F$

8. Magnitude of electron gain enthalpy of Li Na, K, H are in the order?

A) H > Li > Na > K B) K > Na > Li > H

C) Li > Na > H > K D) H > Na > Li > K

9. $N_2 + 3H_2 \rightleftharpoons 2NH_3$. Find the maximum amount of NH_3 formed during the reaction of 2.8g N_2 and 0.6g H_2 are allowed to react

A) 17 B) 1.7 C) 3.4

D) 5.2 E) 0.17

10. Equal moles of N_2 & O_2 are taken and the equilibrium $N_2 + O_2 \rightleftharpoons 2NO$ is attained in a 1L vessel. If the equilibrium constant Kc for the reaction 64 and equilibrium concentration of NO is 0.01 M. The concentration of N_2 & O_2 at equilibrium are .....

A) 0.0125, 0.0125 B) 0.01, 0.01 C) 0.05, 0.01

D) 0.0125, 0.01 E) 0.025, 0.025

11. Which of the following has highest pK_6?

A) CH_3NH_2 B) N-methanamine

C) Benzanamine D) Diethyl amines

E) Ethanamine

12. Which among the following has the same covalant bond length?

A) $C-H, O-H$ B) $C=O, N=O$

C) $C=C, N=C$ D) $C-C, C-N$

13. Which has highest dipole moment?

A) CO_2 B) HF C) HI

D) HBr E) HCl

14. What volume of O_2 get liberated on passing 2F throgh H_2SO_4

15. IUPAC name of $\left[Ag(NH_3)_2\right]\left[Ag(CN)_2\right]$

16. Tropone is an example of

A) Alicyclic B) Acyclic C) Heterocyclic

D) Benzenoid aromatic E) Non-Benzenoid aromatic

17. $CH_3Cl + NaI \rightarrow CH_3I + NaCl$

Name the reaction and solvent using to remove NaCl?

A) Swartz + H_2O B) Wartz + H_2O

C) Finkelsteen + dry acetone D) Fittig + dry acetone

E) Williamsons + H_2O

18. The correct order of boiling point of N-butane, chloro-butane, butanol, ethoxyethane

19. Which organiccompound is used in rubber textile dyying and electroplating industries

A) Formic acid
B) Propanoic acid
C) Acetic acid
D) Sodium benzoate
E) Benzaldehyde

20. A substance shows positive deviation from Raoults law, then which of the statement is true

A) A - B interaction is stronger than A - A and B - B interactions
B) A - B interaction is weaker than A - B & B - B interactions
C) $\Delta H_{mixing} < O$
D) $\Delta V_{mix} < O$
E) $\Delta G_{mixing} > O$

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MATHEMATICS

1. $\int 27x^3\left(1-x^3\right)^{2/3}$

2. $\frac{(3x-4)^2}{9}-\frac{(4x-3)^2}{8}=1$ length of latus rectom

3. $|AB|=21 \quad \left|A^{-1}\right|=7 \quad |B|=?$

4. Find number of combinations of 3 lettered numbers that can be created by 3, 4, 5, 7 with repeating. The three digit number must be greater than zero

5. $\int_0^1 \frac{t}{(t+1)^3}\,dt$

6. The 1st and 20th term of a GP are 512 and $\frac{1}{1024}$. Find the common ratio

7. Direction ratio of 2 lines are <2, 3, 6> and <–1, 2, 3>. Find angle between lines

8. Value of $\int 16x^3 \log_e x\,dx$

9. A commitee of 4 members are to be chosen from 5 students 4 teachers & 3 administrators. Find the probability of there are no teachers.

10. $f(x)=\begin{cases} x^2; \leq & 2 \\ 4x\ 2; & x>2 \end{cases}$ Find the value of x if f(x) is continuous at 2

11. A 3 digit number greater than 500 is to be made with the numbers 3, 4, 5 and 7 find the number of possible way.

12. P(A) 0.7, P (B′) = 0.8 & P $((A \cup B) = 0.8$ Find P $\left(\left(A' \cup B'\right)\right.$

13. Let A be the set of odd numbers in [0.10] & B be the set of prime in [0, 10] P = {(a, b): $a \in B$ a + b is odd} Find n(P)

14. $\int_0^{2\pi} \frac{\sin 2x}{x(2\pi-x)}$

15. $\int \frac{\sec x\sqrt{\sec x}}{\sin x+\sqrt{\cos x}}dx$

17. Find the value of $\sin 15^0 \times \sin 45^0 \times \sin 75^0$

18. Find the 1F of diff. eqn $\frac{dy}{dx} + \frac{y \times 2}{1+x} =$

19. Find $\left[\frac{5i}{(3+i)(3-i)}\right]^{2026}$

20. Find the shortest distance b/w $\left(3\hat{i} + 12\hat{j} + 5\hat{k}\right) + 2\lambda\hat{i}$ and X - axis

21. The eccentricity of on ellipse is $\frac{1}{5}$ and the length of latus rectum is $\frac{48}{5}$. Find the length of major axis

22. Find the area bounded b/w $y = \sqrt{x}. = -x$ $x = 4$ and $x = 0$

23. A chord of the circle $x^2 + y^2 + 6x - 8y - 24 = 0$ making an angle 60^0 with the center. Find the length of the chord.

24. If $\vec{a}. 2\hat{i} + 2\hat{j} - 5\hat{k}$ and $\vec{b} = 2\hat{i} + \hat{j}9 + \alpha\hat{k}$. If $\left|\vec{a} + \vec{b}\right| = \sqrt{29}$. Find α

25. If $\vec{a} = \left(\sin^2\alpha\right)\hat{i} + \left(2 + \cos 2\alpha\right)\hat{j} + \left(\cos^2\alpha\right)\hat{k}$ & $\vec{b} = \hat{i} - \hat{j} + \hat{k}$ are perpendicular. Find α

26. Let F be the set of people who played football and C be the set of people who played cricket. If $n(F) = 45$, $n(C) = 35$. $n(C \cap F) = 13$. Find $n\left[(C \cap F)^1 n(C \cup F)\right]$

27. $\int_0^3 \left|3x^2 - 3\right| dx$

28. $\int \frac{2e^x dx}{\left(10c^{2x} + 5\right)^3}$

29. Consider 2 vectors $\vec{a}$ and $\vec{b}$ with $\left|\vec{a}\right| = 6$ and $\left|\vec{b}\right| = 4$. If $\vec{a}$ make an angle 25^0 with x axis & $\vec{b}$ makes 85^0 with x axis then find $\left|\vec{a} + \vec{b}\right|$

30. $\int \frac{dx}{(1+\cos x)(1-\sec x)}$

31. If $\sin^{-1}x = \cos^{-1}\left(\frac{3x}{4}\right)$ Find x

32. If $\text{cosec}^{-1} t - \cot^{-1} t = \frac{5}{2}$. Then find tan t.

33. If $BA^2 = A$, where $A = \begin{bmatrix} 3 & 5 \\ -2 & -3 \end{bmatrix}$ then B = ?

34. $5\pi - 6\cos^{-1}\left[\sqrt{3}.(2x-1)\right]$ Find x

35. If $f(x) = \frac{\sin x}{x}$. Find $f'\left(\frac{\pi}{2}\right)$

36. K, 6, k + 5 are terms of a GP what can be their common ratio

37. If y. sec $\left[\tan^{-1}\left(\frac{1}{\sqrt{1-x^2}}\right)\right]$. Find $\frac{dy}{dx}$

38. Find the value of $\tan(\tan^{-1}3 + \tan^{-1} 7)$

39. Find the corner points of $x + y \leq 6$ $2x + y \leq 8$ $x \geq 0, y \geq 0$

40. $\lim_{x\to 0} \frac{6\sin x - 2\sin 3x}{3x^3}$

41. If $f(x)\ \sqrt{11-x}, g(x) = \sqrt{x-7}$ and h(x) = f(g(x). Find the maximum value of h(x)

42. Consider a line $x + \sqrt{3}y = 10$. If P is the foot of the perpendicular drawn to the line from origin. Find the angle b/w OP and y axis

43. Consider the word STATISTICS. Find the probability of the work starting with CAT from the letter of the work STATISTICS.

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MEMORY BASED QUESTIONS

PHYSICS

1. What is the ratio of acceleration due to gravity at depths R/2 and 2R/3 from the surface of the earth?
2. What is the ratio of r(Cp/Cv) for a rigid diatomic gas to that of a monoatomic gas?
3. The displacement of a particle varies with time as $x = 1+t^2$. What is the time at which value of velocity and displacement becomes same.
4. What is the refractive index of a prism whose angle of prism is 60^0 and angle of minimum deviation is 30^0?
5. Whan the temperature increases from 30^0C to 70^0C, the resistance increases from 4 Ω to 6 Ω. What is the value of temperature coefficient of resistance?
6. A body of mass 2kg at rest on rough horizontal table starts moving under a constant force of 12N. Find the velocity at the end of 10sec, if the coefficient of friction between block and table is 0.1 ($g = 10m/s^2$)
7. The ratio of masses and radii of thin circular disc and thn circular ring are 2:1 and 1:2 respectively. Find the ratio of their moment of inertia about diametric axis
8. **Find the value of current (in ampere) in a circuit containing a inductor of self inductance 500 mH if tye V = $100\sqrt{2}\,\pi \sin nt$**
9. **Find the ratio of wave number of first line of Lyman series to 1st line of balmer series**
10. **Bullet of mass 0.05kg having velocity 100m/s penetrates to a wooden plank through 50cm. What is the average force exerted by a plant on bullet**
11. **When an electromagnetic wave of wavelength λ strikes a metallic plate maximum K.E of the ejected electron is E. When wave of wavelength $\frac{\lambda}{4}$ strikes the same metal plate maximum kinetic energy of the ejected electron become 6E what is the work function of metal**
12. **In YDSE when wavelength of the monochromatic light is changed from 500 nm to 600nm, fringe width changes by 0.25mm. Find the separation between the slits. If the distance between slit and screen is 1m**

13. What is the heat energy required to convert 2kg ice at -10^0C to water at 10^0C?

14. A cricketer hits a ball coming with a speed of 54km/h. If the ball reverses it direction with same speed what is the impulse given by the cricketer if the mass of the ball is 0.15kg?

A) 4.5 kgms^{-1} B) 5.5 kg ms^{-1}
C) 6.5 kg ms^{-1} D) 45 kg ms^{-1} E) 55 kg m

15. What is the ratio of velocities at t = 5 sec and t = 10sec of a body with initial velocity u = 2ms^{-1}, if its has constant acceleration of 2ms^{-2}?

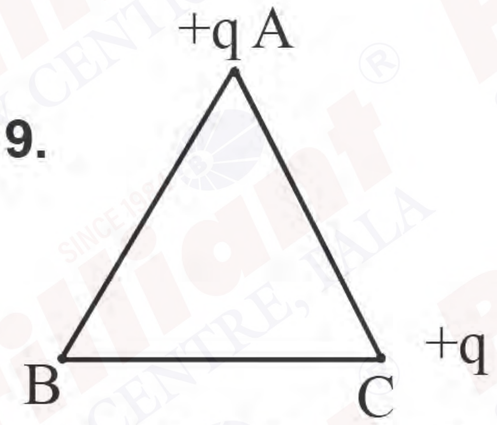
16. What is the speed of transverse wave in a string of mass 5g and length 50cm if tension of the string 64N?

17. Two satellites A and B revolve around a planet. The ratio of their major axis is 2:3 what is ratio of their time period of revolution.

18. Magnetic susceptibility of a diamagnetic material is

A) Positive and large B) Positive and small
C) Zero D) Negative and small

19.



ABC is an equilateral triangle of length L. What is the electric potential at B

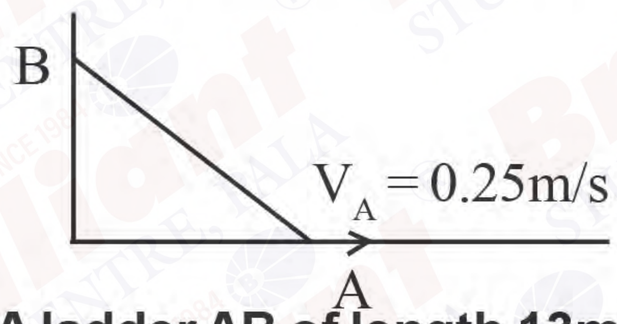
20. How does the resistance R of a resistor change when its length is doubled and area of cross section is halved?

21. Which of the following does not have the dimensions of power:

A) $\frac{1}{2}mv^2$ B) $\frac{mv^2}{t}$
C) mav D) Fv

22. The effective power when two convex lenses are placed in contact is P. How does the value of power change when focal length of each of the lenses are doubled?

23.



A ladder AB of length 13m inclined to a vertical wall is slippuing over horizontal surface with velocity V = 0.25 m/s. When B is 5m above the ground, find the velocity of point B.
V_B = ?

24. Two parallel wires of 5m each current 2A and 3A are placed at a distance of separation of 7cm. What is the force experienced per unit length by each of the wires?

25. Ana electric dipole of dipole moment 12 μ cm is placed in the direction of electric field of magnitude $10^0 NC^{-1}$. What is the work done to rotate the dipole by 60^0?

26. Mutal inductance of a system of two coils 3H. If the current in the primary coil changes from OA to ZA in 0.5 sec what is the emf induced in the secondary coil?

27. 5 identical resistors are connected in a circuit. Find the ratio of maximum possible effective resistance to minimum possible effective resistance.

28. Range of projectile when launched with speed u at angle 30^0 is R. Find the range when it is projected with same speed at an angle 60^0

29. Which of the following is not unit of pressure

A) Bar
B) Newton
C) Pascal
D) Torr

30. Terminal velocity of a solid ball of radius 'r' liquid is directly proportional to

A) r^2
B) 1/r
C) r^3
D) $\frac{1}{r^2}$
E) r

31. A metal rod of length 1m having area of crossection $10^{-3}m^2$ is elongated by a force of 150N. Find the elongation of the rod

(Young's modulus = $6_{\times 10^{11}}$ in SI unit)

32. For two particle having same kinetic energy their debroglie wavelength is proportional to

A) $\frac{1}{\sqrt{m}}$
B) $\sqrt{m}$
C) m
D) $\frac{1}{m}$

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CHEMISTRY (PHARMCY)

1. First element in 3d series which shows +2, +3,+4, +6 oxidation state

   A) Cr B) Mn C) Fe D) Co E) Ni

2. Which of the following is used to convert sodium chromate to sodium dichromate in the preparation of potassium dichromate

   A) Na_2CO_3 B) NaOH C) $KClO_3$ D) H_2SO_4 E) H_2O_2

3. Which of the following series in hydrogen spectrum corresponding to uv radiations

   A) Lyman B) Balmer C) Pachen D) Brackett

4. When CO is reacted with H_2 at 573 K, methanol is formed which is the catalyst used in this process?

   A) Pd-$BaSO_4$ B) Ni-CrO_3 C) ZnO - Cr_2O_3 D) Pt-$BaSO_4$ E) CuO - Cr_2O_3

5. Which of these have the least bond length (in pm)

   A) O_2 B) Cl_2 C) Br_2 D) HF E) F_2

6. Two solutions that are isotonic have smae .....

   A) Same boiling point B) Same freezing point

   C) Same vapour pressure D) Same osmotic pressure

   E) Same solubilities

7. 2-methyl propene is obtaiend as product when sodium methodixe reacts with

   A) 2-chloropropane B) Isobutyl bromide

   C) tert-butyl bromide D) n-butyl bromide

   E) sec-butyl bromide

8. Find the alkene which give 2 mol acetone by ozonolysis

9. Benzene diazonium salt in presence of Cu/HBr will gives bromobenzene (C_6H_5Br) and releases nitrogen gas (N_2) . This reaction is known as

10. 2-methyl propene is the product when sodium methoxide is treated with .....

11. Molarity of a solution obtained by dissolving of 0.4 g NaOH in eno-chyclohex to get 250 ml solution in ()MM = 40)

12. Riemer-Tiemann reaction converts phenol → .....

13. A first reaction is 75% completed in 1000 s at 300 K. Then the time required to complete half of the reaction at 300 K in

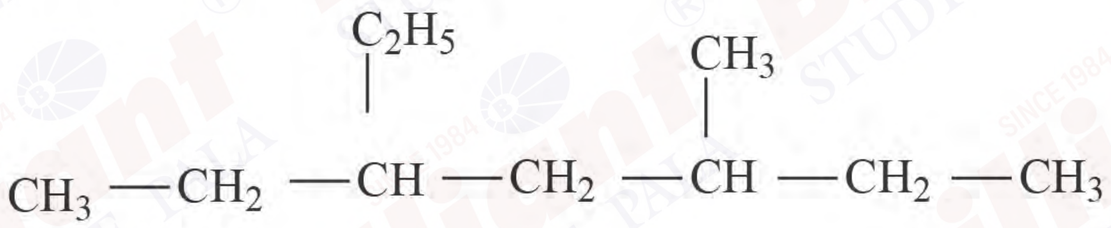
    A) 230 B) 500 C) 250 D) 700 D) 1000

14. Reactant used in Rosenmund reaction is .....

15. The law of triads was proposed by for the reaction

16. $2A + B \rightleftharpoons 2C + D$ the value of $K_c = 4 \times 10^{-2}$ for the reaction $4C + 2D \rightleftharpoons 4A + 2B$ the value of K_c is .....

17. Find the IUPAC name of the compound



18. Which aldehyde does not give Fehling test?

A) Methanal B) Propanal C) Ethanol D) Butanal E) Phenylmethanal

19. What is the name of the element which is known as Eka-Aluminium?

20. Hybridisation of PCl_5

21. Hybridisation of $[CoF_6]^{3-}$

22. Energy and angular momentum of second Bohr orbit.

23. Which lement have large atomic radius?

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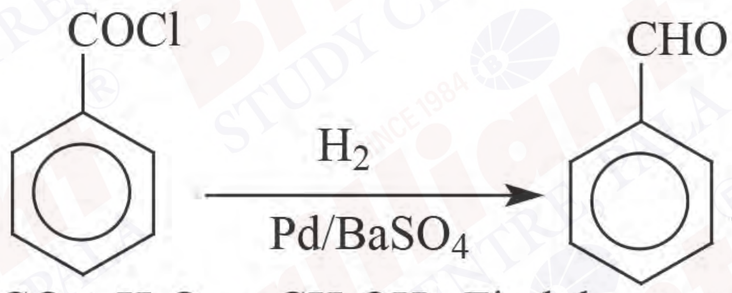
24. In which oxygen have (–I) oxidation state

A) CO_2 B) H_2O C) H_2O_2

25.  . Name the reaction

26. $CO + H_2O \rightarrow CH_3OH$. Find the reagent for this reactions?

27. Least bond length from the following

A) HF B) Cl_2 C) F_2 D) Br_2 E) O_2

28. Which is a vitamin?

A) Ascorbic acid B) Acetic acid C) Formic acid D) Gluamic acid

29. Catalyst used for the industrial preparation of phenol?

30. Which one has highest freezing point?

A) Sucrose B) Glucose C) Ethanol D) Methanol E) Glycol

31. Which of these are globular proteins

A) Keratin B) Insulin C) Albumin

32. Identify Swartz reaction

33. Dipositive ion that has spin magnetic moment $\sqrt{4.9}$ B.M

34. $CHCl_3$ and NaOH react to give .....

35. Highest boiling point of amines

A) $CH_3CH_2NH_2$ B) $CH_3CH_2CH_2NH_2$

C) $CH_3(C_2H_5)_2NH$ D) $CH_3(CH_3)_2$–NH

E) CH_3NH_2

36. Conjugate base for $H_3PO_4^-$

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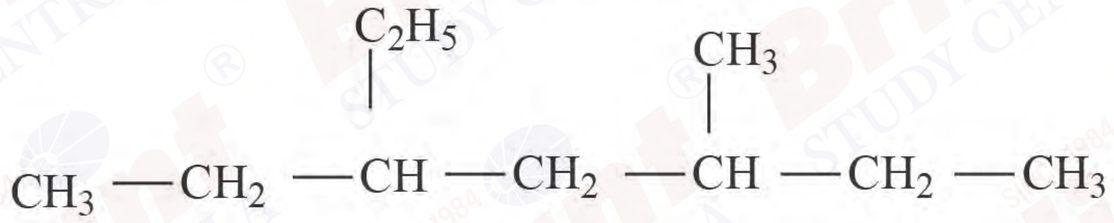

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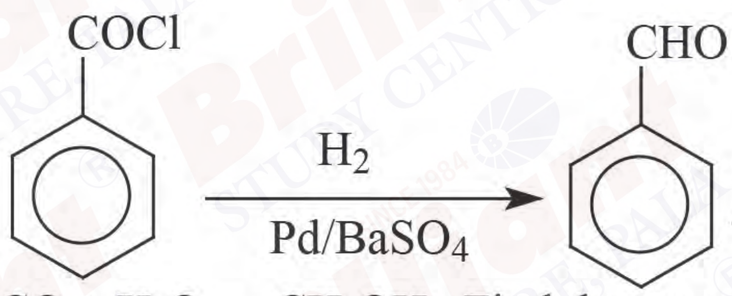
25.  . Name the reaction

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