

JEE Main 2024 April 8 Shift 2 Answer Key

1.

$\text{NiCl}_4^{-2}, (\text{Co}(\text{NH}_3)_6)^{+3}$ has how many unpaired electrons ?

Answer: 2

2.

The line segment joining the points. (5,2) and (2, a) subtends an angle $\pi/4$ at the origin then the absolute value of the product of all possible values of a is

Answer: -4

3.

Decreasing order of Acidic nature

(a) HCOOH

(b) $\text{CH}_3 - \text{CH}_2 - \text{COOH}$

(c) CH_3COOH

(d) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{COOH}$

Answer: A > C > B > D

4.


Value of $\frac{3 \cos 36^\circ + 5 \sin 18^\circ}{5 \cos 36^\circ - 3 \sin 18^\circ}$ is $\frac{a\sqrt{5}-b}{c}$ where a, b, c are natural numbers and $\gcd(a, c) = 1$ then $a + b + c$ is

Answer: 52

5.

S-I Primary secondary and Tertiary amines react with $C_6H_5SO_2Cl$

S-II They form soluble products with NaOH

- a. Statement 1 is true and statement 2 is false.
- b. Statement 1 is false and statement 2 is true.
- c. Statement 1 and statement 2, both are true.
- d. Statement 1 and statement 2, both are false. 

Answer: D

6.

$$\text{If } \alpha \neq a, \begin{vmatrix} \alpha & b & c \\ a & \beta & c \\ a & b & \gamma \end{vmatrix}, \frac{a}{\alpha-a} + \frac{b}{\beta-b} + \frac{c}{\gamma-c} = \gamma \neq c$$

Answer: 1

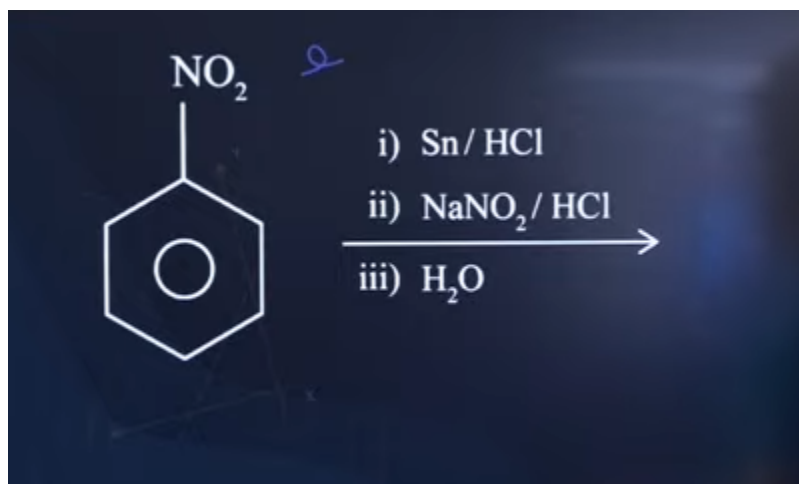
7.

If De- Broglie wavelength of electron is equal to De-Broglie wavelength of proton, then what is the relation between their kinetic energy

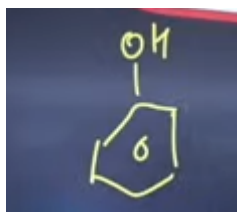
- a. $KE_e > KE_p$
- b. $KE_p > KE_e$
- c. $KE_p = KE_e$
- d. $2KE_e = KE_p$

Answer: A

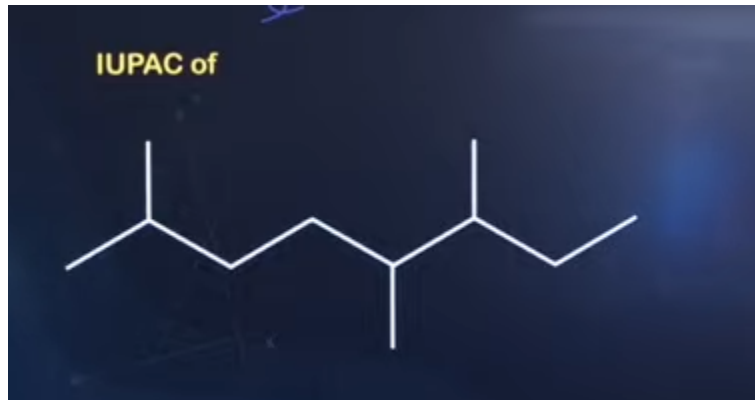
8.



Answer:

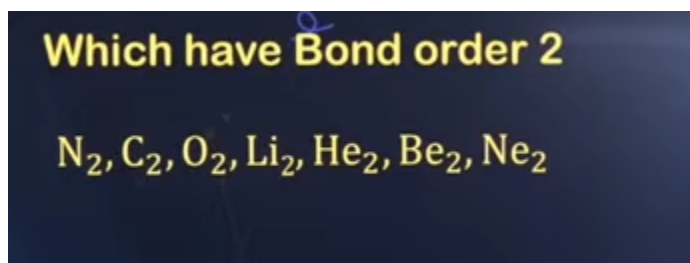


9.



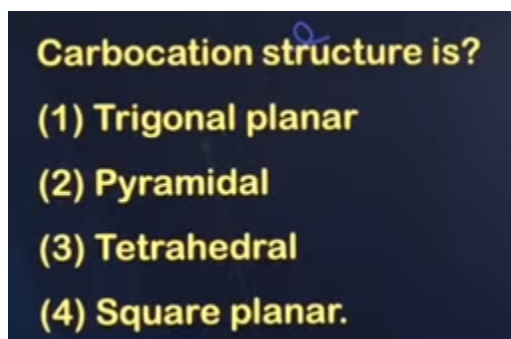
Answer: Trimethyloctane

10.



Answer: C₂, O₂

11.



Answer: A

12.

Which of the following easily reacts with NaOH

a) C_2H_5OH

b) C_6H_5OH

c) $(CH_3)_3C - OH$

d) $PhCH_2 - OH$

Answer: B

13.

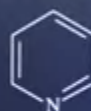
Which of the following are aromatic compounds?

a. Only (i) and (ii)

b. Only (ii) and (iii)

c. Only (i) and (iii)

d. All are Aromatic



Answer: B

14.

The sum of all possible values of $\theta \in [-\pi, 2\pi]$, for $\frac{1+i\cos\theta}{1-2i\cos\theta}$ is purely imaginary.

Handwritten solution for problem 14: $\pi + \frac{\pi}{4}$ and $2\pi - \frac{\pi}{4}$.

Answer:

15.

$y = y(x)$ be the solution curve of the differential equation $\sec y \frac{dy}{dx} + 2x \sin y = x^3 \cos y$, $y(1) = 0$ the $y\sqrt{3}$ is

Answer: $\tan^{-1}(2)$

16.

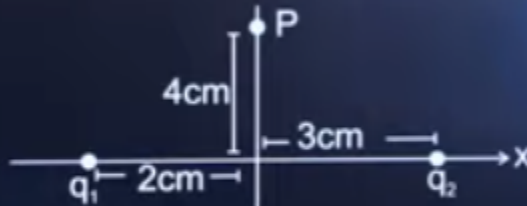
a Figure shows two charges q_1 & q_2 placed on x-axis as shown. If electric field at P is along X - direction, find $\frac{q_1}{q_2}$

(a) $\frac{4\sqrt{5}}{25}$

(b) $\frac{8\sqrt{5}}{25}$

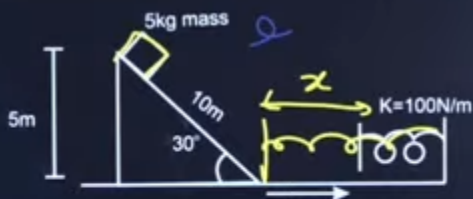
(c) $\frac{12}{25}$

(d) $\frac{16\sqrt{5}}{25}$



Answer: B

17.



A block of mass 5 kg is released as shown in the figure. Surface CD is rough with $\mu = 0.5$, rest of all the surfaces are smooth. Find the maximum compression in the spring (Initially spring is in its natural length.)

Answer: $x=2$

18.

Urea molality is 4.4 m in aqueous solution. What is the mole fraction

Answer: 0.0735