

**29 PROBABLE
BONUS / ERRORS
JEE MAINS
JANUARY ATTEMPT**

Adarsh Barnwal



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<i>Jee Mains Shifts</i>	<i>No of Bonus / Errors</i>
24 JAN S1	2(1)
24 JAN S2	1
25 JAN S1	2(1)
25 JAN S2	5(1)
29 JAN S1	2(1)
29 JAN S2	1
30 JAN S1	3
30 JAN S2	2(1)
31 JAN S1	1
31 JAN S2	2
1 FEB S1	2(1)
1 FEB S2	6(4)

Special thanks to RESONANCE / ALLEN kota / students for pointing out the errors

NOTE -

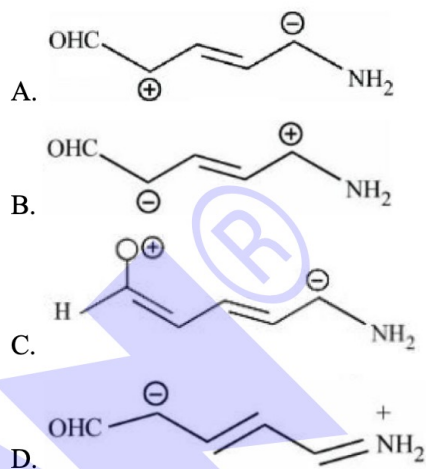
ALL THE CREDIT MUST GOES TO **RESONANCE KOTA** , **ALLEN KOTA** , **STUDENTS** FOR POINTING OUT THE ERRORS (I HAVE JUST ACCUMULATED , EDITED AND PRESENTED IT IN A BEAUTIFUL , CONCISE MANNER INFRONT OF PUBLIC)

A decorative graphic consisting of several parallel white lines of varying lengths, slanted upwards from left to right, located in the bottom right corner of the page.

24 JAN S1



Increasing order of stability of the resonance structure is :



- (1) C, D, B, A
(2) C, D, A, B
(3) D, C, A, B
(4) D, C, B, A

Official Ans. by NTA (2)

Allen Ans. (BONUS)

Let Ω be the sample space and $A \subseteq \Omega$ be an event. Given below are two statements :

(S1) : If $P(A) = 0$, then $A = \phi$

(S2) : If $P(A) = 1$, then $A = \Omega$

Then

(1) only (S1) is true

(2) only (S2) is true

(3) both (S1) and (S2) are true

(4) both (S1) and (S2) are false

Official Ans. by NTA (4)

Allen Ans. (3)

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24 JAN S2



Which of the following cannot be explained by crystal field theory?

- (1) The order of spectrochemical series
- (2) Magnetic properties of transition metal complexes
- (3) Colour of metal complexes
- (4) Stability of metal complexes

Official Ans. by NTA (4)

Allen Ans. (1)

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25 JAN S1



A cubic solid is made up of two elements X and Y. Atoms of X are present on every alternate corner

and one at the center of cube. Y is at $\frac{1}{3}$ of the total

faces. The empirical formula of the compound is

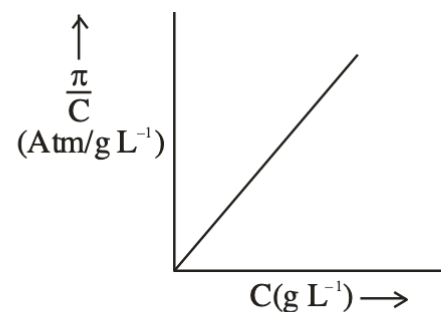
- (1) $X_2Y_{1.5}$ (2) $X_{2.5}Y$
(3) $XY_{2.5}$ (4) $X_{1.5}Y_2$

Official Ans. by NTA (2)

Allen Ans. (Bonus)

The osmotic pressure of solutions of PVC in cyclohexanone at 300 K are plotted on the graph.

The molar mass of PVC is _____ g mol^{-1}
(Nearest integer)



(Given : $R = 0.083 \text{ L atm K}^{-1} \text{ mol}^{-1}$)

Official Ans. by NTA (41500)

Allen Ans. (Bonus/41500)

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25 JAN S2



Statement I :- Dipole moment is a vector quantity and by convention it is depicted by a small arrow with tail on the negative centre and head pointing towards the positive centre.

Statement II :- The crossed arrow of the dipole moment symbolizes the direction of the shift of charges in the molecules.

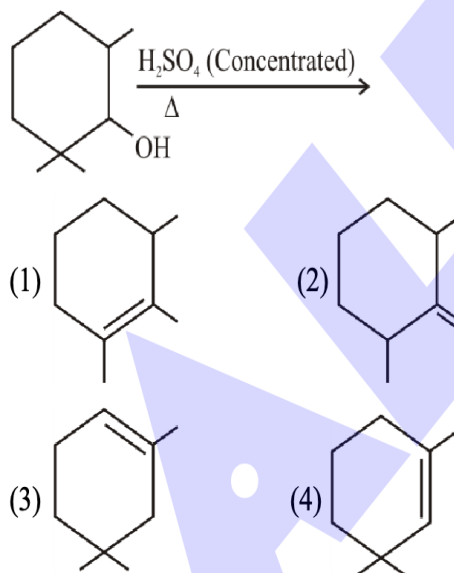
In the light of the above statements, choose the most appropriate answer from the options given below :-

- (1) Both Statement I and Statement II are correct.
- (2) Statement I is incorrect but Statement II is correct.
- (3) Both Statement I and Statement II are incorrect.
- (4) Statement I is correct but Statement II is incorrect.

Official Ans. by NTA (4)

Allen Ans. (2)

Find out the major product from the following reaction.



Official Ans. by NTA (1)

Allen Ans. (A, D)

28.0 L of CO_2 is produced on complete combustion of 16.8 L gaseous mixture of ethane and methane at 25°C and 1 atm. Heat evolved during the combustion process is _____ kJ.

Given : $\Delta H_{\text{C}}(\text{CH}_4) = -900 \text{ kJ mol}^{-1}$

$\Delta H_{\text{C}}(\text{C}_2\text{H}_4) = -1400 \text{ kJ mol}^{-1}$

Official Ans. by NTA (925.00)

Allen Ans. (847.00)

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25 JAN S2



A first order reaction has the rate constant, $k = 4.6 \times 10^{-3} \text{ s}^{-1}$. The number of correct statement/s from the following is/are _____.

Given : $\log 3 = 0.48$

- A. Reaction completes in 1000 s.
- B. The reaction has a half-life of 500 s.
- C. The time required for 10% completion is 25 times the time required for 90% completion.
- D. The degree of dissociation is equal to $(1 - e^{-kt})$.
- E. The rate and the rate constant have the same unit.

Official Ans. by NTA (2.00)

Allen Ans. (1.00)

If the function

$$f(x) = \begin{cases} (1 + |\cos x|) \frac{\lambda}{|\cos x|}, & 0 < x < \frac{\pi}{2} \\ \mu, & x = \frac{\pi}{2} \\ e^{\frac{\cot 6x}{\cot 4x}}, & \frac{\pi}{2} < x < \pi \end{cases}$$

is continuous at $x = \frac{\pi}{2}$, then

$9\lambda + 6 \log_e \mu + \mu^6 - e^{6\lambda}$ is equal to

- (1) 11
- (2) 8
- (3) $2e^4 + 8$
- (4) 10

Official Ans. by NTA (4)

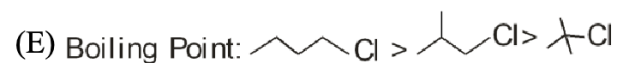
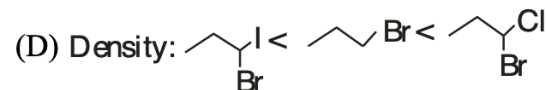
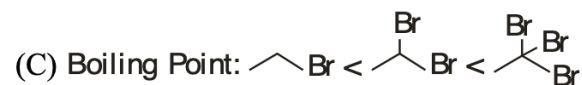
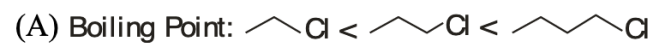
Allen Ans. BONUS

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29 JAN S1



Identify the correct order for the given property for following compounds



Choose the correct answer from the option given below :-

(1) (B), (C) and (D) only

(2) (A), (C) and (E) only

(3) (A), (C) and (D) only

(4) (A), (B) and (E) only

Official Ans. by NTA (2)

Allen Ans. (2 & 4)

Fifteen football players of a club-team are given 15 T-shirts with their names written on the backside. If the players pick up the T-shirts randomly, then the probability that at least 3 players pick the correct T-shirt is

(1) $\frac{5}{24}$

(2) $\frac{2}{15}$

(3) $\frac{1}{6}$

(4) $\frac{5}{36}$

Official Ans. by NTA (3)

Allen Ans. (Bonus)

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29 JAN S2



The statement $B \Rightarrow ((\sim A) \vee B)$ is equivalent to

(1) $B \Rightarrow (A \Rightarrow B)$

(2) $A \Rightarrow (A \Leftrightarrow B)$

(3) $A \Rightarrow ((\sim A) \Rightarrow B)$

(4) $B \Rightarrow ((\sim A) \Rightarrow B)$

Official Ans. by NTA (2)

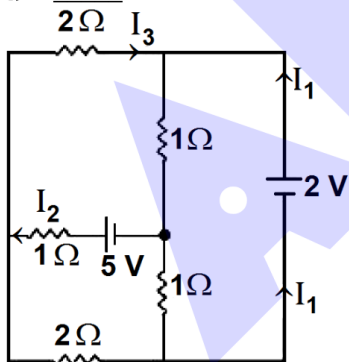
Allen Ans. (1 or 3 or 4)

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30 JAN S1



In the following circuit, the magnitude of current I_1 , is _____ A.



Official Ans. by NTA (1)

Allen Ans. (1.5)

In a screw gauge, there are 100 divisions on the circular scale and the main scale moves by 0.5 mm on a complete rotation of the circular scale. The zero of circular scale lies 6 divisions below the line of graduation when two studs are brought in contact with each other. When a wire is placed between the studs, 4 linear scale divisions are clearly visible while 46th division of the circular scale coincide with the reference line. The diameter of the wire is _____ $\times 10^{-2}$ mm.

Official Ans. by NTA (22)

Allen Ans. (220)

Some amount of dichloromethane (CH_2Cl_2) is added to 671.141 mL of chloroform (CHCl_3) to prepare 2.6×10^{-3} M solution of CH_2Cl_2 (DCM).

The concentration of DCM is _____ ppm (by mass).

Given: Atomic mass : C = 12; H = 1; Cl = 35.5
density of $\text{CHCl}_3 = 1.49 \text{ g cm}^{-3}$

Official Ans. by NTA (221)

Allen Ans. (148)

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30 JAN S2



Match List I with List II:

	List I (Complexes)		List II (Hybridisation)
(A)	$[\text{Ni}(\text{CO})_4]$	I	sp^3
(B)	$[\text{Cu}(\text{NH}_3)_4]^{2+}$	II	dsp^2
(C)	$[\text{Fe}(\text{NH}_3)_6]^{2+}$	III	sp^3d^2
(D)	$[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$	IV	d^2sp^3

(1) A – II, B – I, C – III, D – IV

(2) A – I, B – II, C – III, D – IV

(3) A – II, B – I, C – IV, D – III

(4) A – I, B – II, C – IV, D – III

Official Ans. by NTA (4)

Allen Ans. (BONUS)

Let $a_1 = 1, a_2, a_3, a_4, \dots$ be consecutive natural

numbers. Then $\tan^{-1}\left(\frac{1}{1+a_1a_2}\right) + \tan^{-1}\left(\frac{1}{1+a_2a_3}\right)$

$+ \dots + \tan^{-1}\left(\frac{1}{1+a_{2021}a_{2022}}\right)$ is equal to

(1) $\frac{\pi}{4} - \cot^{-1}(2022)$ (2) $\cot^{-1}(2022) - \frac{\pi}{4}$

(3) $\tan^{-1}(2022) - \frac{\pi}{4}$ (4) $\frac{\pi}{4} - \tan^{-1}(2022)$

Official Ans. by NTA (3)

Allen Ans. (1,3)

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31 JAN S1



(S1) $(p \Rightarrow q) \vee (p \wedge (\sim q))$ is a tautology

(S2) $((\sim p) \Rightarrow (\sim q)) \wedge ((\sim p) \vee q)$ is a

Contradiction. Then

- (1) only (S2) is correct
- (2) both (S1) and (S2) are correct
- (3) both (S1) and (S2) are wrong
- (4) only (S1) is correct

Official Ans. by NTA (2)

Allen Ans. (4)

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31 JAN S2



Which of the following compounds are not used as disinfectants?

- (A) Chloroxylenol
- (B) Bithional
- (C) Veronal
- (D) Prontosil
- (E) Terpineol

Choose the **correct** answer from the options given below:

- (1) A, B, E
- (2) A, B
- (3) B, D, E
- (4) C, D

Official Ans. by NTA (4)

Allen Ans. (1)

Let $A = [a_{ij}]$, $a_{ij} \in \mathbb{Z} \cap [0, 4]$, $1 \leq i, j \leq 2$. The number of matrices A such that the sum of all entries is a prime number $p \in (2, 13)$ is _____.

Official Ans. by NTA (196)

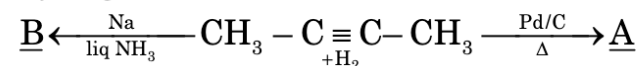
Allen Ans. (204)

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1 FEB S1



But-2-yne is reacted separately with one mole of Hydrogen as shown below:



- A. A is more soluble than B.
- B. The boiling point & melting point of A are higher and lower than B respectively.
- C. A is more polar than B because dipole moment of A is zero.
- D. Br₂ adds easily to B than A.

Identify the incorrect statements from the options given below :-

- (1) B and C only
- (2) B, C and D only
- (3) A, C and D only
- (4) A and B only

Official Ans. by NTA (2)

Allen Ans. (Bonus)

Number of isomeric compounds with molecular formula C₉H₁₀O which (i) do not dissolve in NaOH (ii) do not dissolve in HCl. (iii) do not give orange precipitate with 2, 4 – DNP (iv) on hydrogenation give identical compound with molecular formula C₉H₁₂O is _____ .

Official Ans. by NTA (2)

Allen Ans. (0)

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1 FEB S2



The effect of addition of helium gas to the following reaction in equilibrium state, is :



(1) the equilibrium will shift in the forward direction and more of Cl_2 and PCl_3 gases will be produced.

(2) the equilibrium will go backward due to suppression of dissociation of PCl_5 .

(3) helium will deactivate PCl_5 and reaction will stop.

(4) addition of helium will not affect the equilibrium.

Official Ans. by NTA (1)

Allen Ans. (A & D)

Among following compounds, the number of those present in copper matte is _____.

- A. CuCO_3
- B. Cu_2S
- C. Cu_2O
- D. FeO

Official Ans. by NTA (3)

Allen Ans. (1)

1×10^{-5} M AgNO_3 is added to 1 L of saturated solution of AgBr . The conductivity of this solution at 298 K is _____ $\times 10^{-8}$ S m^{-1} .

[Given : $K_{\text{sp}}(\text{AgBr}) = 4.9 \times 10^{-13}$ at 298K

$$\lambda_{\text{Ag}^+}^0 = 6 \times 10^{-3} \text{ S m}^2 \text{ mol}^{-1}$$

$$\lambda_{\text{Br}^-}^0 = 8 \times 10^{-3} \text{ S m}^2 \text{ mol}^{-1}$$

$$\lambda_{\text{NO}_3^-}^0 = 7 \times 10^{-3} \text{ S m}^2 \text{ mol}^{-1}]$$

Official Ans. by NTA (14)

Allen Ans. (Bonus)

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1 FEB S2



Let a, b be two real numbers such that $ab < 0$. If the complex number $\frac{1+ai}{b+i}$ is of unit modulus and $a+ib$ lies on the circle $|z-1| = |2z|$, then a possible value of $\frac{1+[a]}{4b}$, where $[t]$ is greatest integer function, is :

- (1) $-\frac{1}{2}$ (2) -1
(3) 1 (4) $\frac{1}{2}$

Official Ans. by NTA (1)

Allen Ans. (Bonus)

Let $\vec{a} = 5\hat{i} - \hat{j} + 3\hat{k}$ and $\vec{b} = \hat{i} + 3\hat{j} + 5\hat{k}$ be two vectors. Then which one of the following statements is TRUE?

- (1) Projection of \vec{a} on \vec{b} is $\frac{17}{\sqrt{35}}$ and the direction of the projection vector is same as of \vec{b}
(2) Projection of \vec{a} on \vec{b} is $\frac{-17}{\sqrt{35}}$ and the direction of the projection vector is same as of \vec{b}
(3) Projection of \vec{a} on \vec{b} is $\frac{17}{\sqrt{35}}$ and the direction of the projection vector is opposite to the direction of \vec{b}
(4) Projection of \vec{a} on \vec{b} is $\frac{-17}{\sqrt{35}}$ and the direction of the projection vector is opposite to the direction of \vec{b}

Official Ans. by NTA (1)

Allen Ans. (Bonus)

Let $\alpha x + \beta y + \gamma z = 1$ be the equation of a plane passing through the point $(3, -2, 5)$ and perpendicular to the line joining the points $(1, 2, 3)$ and $(-2, 3, 5)$. Then the value of $\alpha\beta\gamma$ is equal to _____.

Official Ans. by NTA (6)

Allen Ans. (Bonus)

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