DR ACADEMY

DO RIGHT FOR GENUINE EDUCATION

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SUBJECT
CHEMISTRY

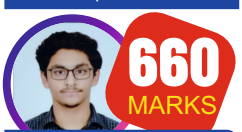
KCET EXAMINATION - 2025

VERSION
D3

LONG TERM COACHING
1ST BATCH FOR NEET – 2026

5TH STARTS ON
JUNE - 2025

NEET TOPPERS OF DR ACADEMY

NEET - 2024 | JIPMER - PUDUCHERRY	NEET - 2021 | JIPMER - PUDUCHERRY	NEET - 2024 | BMC - BANGALORE	NEET - 2024 | BMC - BANGALORE	NEET - 2024 | BIMC - BELAGAVI	NEET - 2024 | KIMS - HUBLI
 706 MARKS	 695 MARKS	 690 MARKS	 686 MARKS	 686 MARKS	 686 MARKS
VENKATA SURYA TEJA GUDURI	LAKSHMAN REDDY B V	ABHISHEK A BADAGOUDAR	RAHUL KADLAGOND	AMEERMUSADDIQ SANADI	ADITYA SAKRI
NEET - 2024 | BMC - BANGALORE	NEET - 2024 | SABVIMS - BENGALURU	NEET - 2024 | MMCRI - MYSORE	NEET - 2023 | BMC, BANGALORE	NEET - 2023 | JIPMER PUDUCHERRY	NEET - 2022 | BIMC, BELAGAVI
 681 MARKS	 681 MARKS	 680 MARKS	 680 MARKS	 677 MARKS	 677 MARKS
UTTAM SUBHASH HUKKERI	MOHAMMED NAASIRUDDEEN D	SUHAS L KORABU	SHRAVAN REDDY C N	KAMALIKA CHALLA	SACHI KALLOLI
NEET - 2023 | AIIMS, NAGPUR	NEET - 2022 | AIIMS, BHOPAL	NEET - 2022 | BMC, BANGALORE	NEET - 2022 | BMC, BANGALORE	NEET - 2024 | ESIMC - BANGALORE	NEET - 2024 | MMCRI - MYSORE
 676 MARKS	 675 MARKS	 672 MARKS	 672 MARKS	 671 MARKS	 671 MARKS
MOHAMMED SULEMAN	CHATHUSH GOWDA D S	CHANDANA D	SOWRAV B	ZOYA FIRDOUSE	GIRISH J PARAMAGOND
NEET - 2024 | KIMS - HUBLI	NEET - 2024 | KIMS - HUBLI	NEET - 2024 | KIMS - HUBLI	NEET - 2021 | BMC, BANGALORE	NEET - 2020 | BMC, BANGALORE	NEET - 2024 | GIMS - GULBARGA
 670 MARKS	 666 MARKS	 665 MARKS	 665 MARKS	 665 MARKS	 663 MARKS
SNEHA SUBHAS PATIL	RAJIV BHEEMASHANKAR CHOUDHARI	C SATHYAM	RASHMI PATIL	JAYANTH L S	MOHAMMED ZEESHAN
NEET - 2024 | MIMS - MANDYA	NEET - 2024 | MMCRI - MYSORE	NEET - 2022 | BMC, BANGALORE	NEET - 2024 | KIMS - HUBLI	NEET - 2023 | JIPMER PUDUCHERRY	NEET - 2024 | BIMC - BELAGAVI
 662 MARKS	 662 MARKS	 662 MARKS	 661 MARKS	 661 MARKS	 660 MARKS
POOJA U	SAMPAT GOPAL GOKAK	SIDDHARTH A S	DIVYA M YALIGAR	SHASHANK SURAPOOR	ANMOL R KOTNAL
NEET - 2024 | KIMS - BANGALORE	NEET - 2024 | MMCRI - MYSORE	NEET - 2024 | SABVIMS - BENGALURU	NEET - 2024 | SABVIMS - BENGALURU	NEET - 2021 | KIMS, HUBLI	NEET - 2024 | KIMS - HUBLI
 660 MARKS	 660 MARKS	 660 MARKS	 660 MARKS	 660 MARKS	 657 MARKS
ADHITHYA SUDARSAN GOKHALE	SHRIDHAR BIRADAR	POOJA N	TARUN N	NACHIKET KEMPANNA	SINDHU VADAVADAGI

DR ACADEMY IS THE PERFECT DESTINATION FOR MEDICAL ASPIRANTS

THE JOURNEY... NEET MEDICAL SELECTIONS

2018	2019	2020	2021	2022	2023	2024
123	210	182	279	445	452	569

TOTAL 2260 MEDICAL SELECTIONS

in seven consecutive years. Our students joined in many reputed medical colleges across Karnataka.

NEET - 2024 | MIMS - MANDYA	NEET - 2024 | SABVIMS - BENGALURU	NEET - 2024 | GMC - SAMBHAJINAGAR	NEET - 2024 | KIMS - HUBLI	NEET - 2024 | MIMS - MANDYA	NEET - 2024 | SIMS - SHIMOGA
 657 MARKS	 657 MARKS	 656 MARKS	 656 MARKS	 656 MARKS	 656 MARKS
S SUHAS	SHREEHARINATH A B	PRATEEK SUBHASH TOPINATTI	YASEEN MULLA	KUSUMA M	NAGAVARDHAN MR
NEET - 2024 | VIMS - BELLARY	NEET - 2023 | BMC, BANGALORE	NEET - 2021 | AIIMS, HYDERABAD	NEET - 2024 | AIIMS, HYDERABAD.	NEET - 2024 | BIMC - BELAGAVI	NEET - 2024 | HIMS - HASSAN
 656 MARKS	 656 MARKS	 656 MARKS	 655 MARKS	 655 MARKS	 655 MARKS
N POOJITHA SHREE	BHANU PRAKASH D M	VARUN KAJAGAR	AMODH NAIK	SAKSHI CHANDRASHEKHAR YALARADDI	NITYA REDDY C
NEET - 2024 |SIMS - SHIMOGA	NEET - 2024 | VIMS - BELLARY	NEET - 2023 | BMC, BANGALORE	NEET - 2021 | BMC, BANGALORE	NEET - 2024 | BIMC - BELAGAVI	NEET - 2024 | KIMS - HUBLI
 655 MARKS	 654 MARKS	 654 MARKS	 654 MARKS	 653 MARKS	 653 MARKS
MAHIPAL SINGH	NIVEDITA	ABHISHEK V G	KUMARESH HIREMATH	SIDDANAGOUDA S PATIL	VINDHYA B G
NEET - 2024 | BIMC - BELAGAVI	NEET - 2024 | VIMS - BELLARY	NEET - 2024 | VIMS - BELLARY	NEET - 2024 | KIMS - HUBLI	NEET - 2024 | KIMS - HUBLI	NEET - 2024 | MIMS - MANDYA
 652 MARKS	 652 MARKS	 652 MARKS	 651 MARKS	 650 MARKS	 650 MARKS
BHOOMIKA BAYAKOL	CHIRANTHAN J	B K V KARTHIKEYA	SHASHANK VALIMARAD	PARASHURAM KYADIGGERI	PREETHAM K M
NEET-2022 | BMC, BANGALORE	NEET-2022 | KIMS, HUBLI	NEET - 2024 | VIMS - BELLARY	NEET - 2024 | VIMS - BELLARY	NEET - 2024 | BMC - BANGALORE	NEET - 2024 | BIMC - BELAGAVI
 650 MARKS	 650 MARKS	 649 MARKS	 648 MARKS	 647 MARKS	 647 MARKS
SANKALP	ABHIJIT RAMESH MIRJI	KEERTI VEERANNA KORI	SONIYA S	NAVYA	SIDDANAGOUDA PATIL
NEET - 2024 | BIMC - BELAGAVI	NEET-2024 | MIMS - MANDYA	NEET-2022 | BMC, BANGALORE	NEET-2021 | BMC, BANGALORE	NEET-2020 | BMC, BANGALORE	NEET-2024 | CIMS - CHAMARAJANAGAR
 647 MARKS	 647 MARKS	 647 MARKS	 647 MARKS	 647 MARKS	 646 MARKS
OMKAR N MUDENUR	VIJAY KUMAR B DEYANNAVAR	SUPRIT SAMJAY K	PRAMOD I HONAGOUD	CHANDAN S	BUTHESH G
NEET-2024 | GIMS - GADAG	NEET-2024 | VIMS - BELLARY	NEET-2022 | BMC, BANGALORE	NEET-2022 | KIMS, HUBLI	NEET-2024 | BIMC - BELAGAVI	NEET-2024 | GIMS - GADAG
 646 MARKS	 646 MARKS	 646 MARKS	 646 MARKS	645 MARKS	645 MARKS
BASAVAKIRAN DHAREPPANAVAR	VENKATESH REDDY	SHIVAANI S GOUNDER	ROHAN R KONGI	CHANDANA B	SHASHANK CHANDRA SHEKHAR KANDAGAL
NEET-2024 | MIMS - MANDYA	NEET-2024 | PSGIMS - COIMBATORE	NEET-2024 | VIMS - BELLARY	NEET-2023 | BMC, BANGALORE	NEET-2023 | GMC, SECUNDERABAD	NEET-2022 | BMC, BANGALORE
645 MARKS	645 MARKS	645 MARKS	645 MARKS	645 MARKS	645 MARKS
PRASHANTGOUDA MENASAGI	GOURAV S	MEHANTH SAI REDDY G R	NABIYA MUSHTAQ AHMED M	VIJESH KANNA K	SAATHVIK S G
NEET-2021 | MMCRI, MYSORE	NEET-2024 | HIMS - HASSAN	NEET-2024 | MIMS - MANDYA	NEET-2023 | MMCRI, MYSORE	NEET-2022 | BMC, BANGALORE	NEET-2022 | SMC, CHENNAI
645 MARKS	644 MARKS	644 MARKS	643 MARKS	643 MARKS	643 MARKS
AJEETH MALLAPPA T	DEEPTHI S M	SANJANA R	VISHAL S PATIL	VAISHNAVI REDDY	S NAYANA

1. In the reaction between hydrogen sulphide and acidified permanganate solution,
1) H_2S is oxidised to SO_2, MnO_4^- is reduced to MnO_2
2) H_2S is reduced to SO_2, MnO_4^- is oxidised to Mn^{2+}
3) H_2S is oxidised to S, MnO_4^- is reduced to Mn^{2+}
4) H_2S is reduced to S, MnO_4^- is oxidised to Mn^{2+}

Ans. 3

Sol. Conceptual

2. A member of the Lanthanoid series which is well known to exhibit +4 oxidation state is
1) Europium 2) Erbium
3) Cerium 4) Samarium

Ans. 3

Sol. Conceptual

3. In which of the following pairs, both the elements do not have $(n-1)d^{10}ns^2$ configuration?
1) Zn, Cd 2) Cd, Hg
3) Ag, Cu 4) Cu, Zn

Ans. 3

Sol. $Cu \rightarrow 4s^1 3d^{10}$
$Ag \rightarrow 5s^1 4d^{10}$

4. A ligand which has two different donor atoms and either of the two ligates with the central metal atom/ion in the complex is called _____.
1) Unidentate ligand 2) Polydentate ligand
3) Ambidentate ligand 4) Chelate ligand

Ans. 3

Sol. Conceptual

5. Which of the following statements are **true** about $[NiCl_4]^{2-}$?
(a) The complex has tetrahedral geometry.
(b) Co-ordination number of Ni is 2 and oxidation state is +4.
(c) The complex is sp^3 hybridised.
(d) It is a high spin complex.
(e) The complex is paramagnetic
1) a, b, d and e 2) b, c, d and e
3) a, b, c and d 4) a, c, d and e

Ans. 4

Sol. Conceptual

6. Which formula and its name combination is **incorrect**?
1) $[CoCl_2(en)_2]Cl$, Dichloridobis (ethane-1, 2-diamine) cobalt(III) chloride
2) $[Co(NH_3)_5(CO_3)]Cl$,
Pentaammine carbonylcobalt (III) chloride
3) $[Pt(NH_3)_2Cl(NO_2)]$,
Diammine chloridonitrito-N-platinum (II)
4) $K_3[Cr(C_2O_4)_3]$,
Potassium trioxalatochromate (III)

Ans. 2

Sol. Conceptual

7. In the complex ion $[Fe(C_2O_4)_3]^{3-}$, the Co-ordination number of Fe is
1) 5 2) 6 3) 3 4) 4

Ans. 2

Sol. Conceptual

8. Match List-I with List-II for the following reaction pattern

Glucose $\xrightarrow{\text{Reagent}}$ Product $\rightarrow$ Structural prediction

List-I (Reagents)	**List-II (Structural prediction)**
a) Acetic anhydride	i) Glucose has an aldehyde group
b) Bromine water	ii) Glucose has a straight chain of six carbon atoms
c) Hydroiodic acid	iii) Glucose has five hydroxyl groups
d) Hydrogen cyanide	iv) Glucose has a carbonyl group

Choose the correct answer from the options given below.
1) a-iii, b-i, c-ii, d-iv 2) a-i, b-ii, c-iii, d-iv
3) a-iii, b-ii, c-i, d-iv 4) a-iv, b-iii, c-ii, d-i

Ans. 1

Sol. Conceptual

9. The **correct** sequence of α – amino acid, hormone, vitamin, carbohydrates respectively is
1) Glutamine, Insulin, Aspartic acid, Fructose
2) Arginine, Testosterone, Glutamic acid, Maltose
3) Aspartic acid, Insulin, Ascorbic acid, rhamnose
4) Thiamine, Thyroxine, Vitamin A, Glucose

Ans. 3

Sol. Conceptual

10. Which examples of carbohydrates exhibit α – link (α – glycosidic link) in their structure?
1) Amylose and Amylopectin
2) Cellulose and Glycogen
3) Glucose and Fructose
4) Maltose and Lactose

Ans. 1

Sol. Conceptual

11. In the titration of potassium permanganate ($KMnO_4$) against Ferrous ammonium sulphate (FAS) solution, dilute sulphuric acid but not nitric acid is used to maintain acidic medium, because
1) Nitric acid doesn't act as an indicator
2) Nitric acid itself is an oxidising agent
3) Nitric acid is a weak acid than sulphuric acid
4) It is difficult to identify the end point

Ans. 2

Sol. HNO_3 is an oxidising agent

12. The group reagent $NH_4Cl_{(s)}$ and aqueous NH_3, will precipitate which of the following ion
1) Al^{3+} 2) Ba^{2+} 3) Ca^{2+} 4) NH_4^+

Ans. 1

Sol. Al^{3+} ppt as $Al(OH)_3$ in presence of NH_4Cl and NH_4OH.

13. In the preparation of sodium fusion extract, the purpose of fusing organic compound with a piece of sodium metal is to
1) Convert the elements of the compound from covalent form to ionic form
2) Convert the elements of the compound from ionic form to covalent form
3) Decrease the melting point of the compound
4) Convert the organic compound into vapour state

Ans. 1

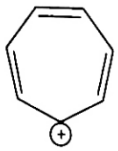
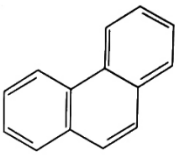
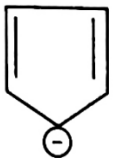
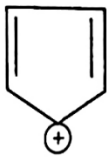
Sol. Conceptual

14. The sodium fusion extract is boiled with concentrated nitric acid while testing for halogens. By doing so, it
1) increases the solubility of $AgCl$
2) increases the concentration of NO_3^- ion
3) decomposes Na_2S and NaCN, if formed
4) helps in precipitation of $AgCl$

Ans. 3

Sol. Conceptual

15. Which of the following is not an aromatic compound?

1) 
2) 
3) 
4) 

Ans. 4

Sol. Conceptual

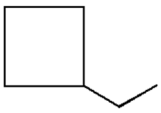
16. The IUPAC name of the given organic compound is

$HC \equiv C - CH = CH - CH = CH_2$

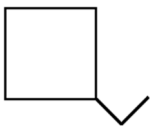
1) Hexa - 5-yn-1,3-diene
2) Hexa-1,3-dien - 5 - yne
3) Hexa - 3, 5-dien -1- yne
4) Hexa-1-yn-3,5-diene

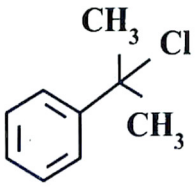
Ans. 2

Sol. Conceptual

17. Among the following, identify the compound that is not an isomer of hexane
1) $CH_3 - CH_2 - CH_2 - CH_2 - CH_2 - CH_3$
2) 
3) $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - CH_2 - CH_3$
4) $CH_3 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - CH_3$

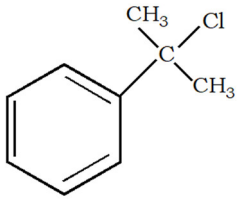
Ans. 2

Sol.  is not an isomer of hexane because, it is a ring chain isomer of **hexene**.

18. The organic compound  can be classified as _____.

1) Benzyl halide 2) Aryl halide
3) Alkyl halide 4) Allylic halide

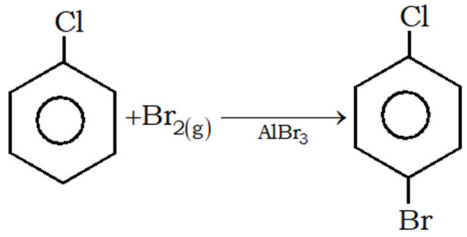
Ans. 1

Sol.  is a 3^0 benzyl chloride

19. Chlorobenzene reacts with bromine gas in the presence of Anhy $AlBr_3$ to yield p-Bromochlorobenzene. This reaction is classified as

1) Nucleophilic substitution reaction
2) Electrophilic substitution reaction
3) Addition reaction
4) Elimination reaction

Ans. 2

Sol. 

is an example for Electrophilic substitution reaction

20. The organometallic compound $(CH_3)_3CMgBr$ on reaction with D_2O produces

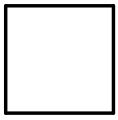
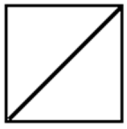
1) $(CD_3)_3CD$ 2) $(CD_3)_3COD$
3) $(CH_3)_3CD$ 4) $(CH_3)_3COD$

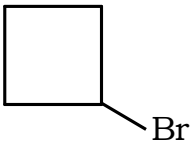
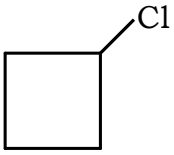
Ans. 3

Sol.

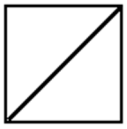
$$CH_3-\underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}}-MgBr \xrightarrow{D_2O} CH_3-\underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}}-D + Mg(OD)Br$$

21. The major product formed when 1 - Bromo-3-Chlorocyclobutane reacts with metallic sodium in dry ether is

1)  2) 

3)  4) 

Ans. 2

Sol. Intra molecular Wurtz reaction takes place and forms 

22. Ethyl alcohol is heated with concentrated sulphuric acid at 413 K (140^0C). The major product formed is

1) $CH_3-O-C_3H_7$ 2) $CH_2=CH_2$
3) $CH_3COOC_2H_5$ 4) $C_2H_5-O-C_2H_5$

Ans. 4

Sol. Diethyl Ether (inter molecular dehydration takes place)

$$2C_2H_5-OH \xrightarrow{413K} C_2H_5-O-C_2H_5+H_2O$$

23. Phenol can be distinguished from propanol by using the reagent

1) Iron metal 2) Iodine in alcohol
3) Sodium metal 4) Bromine water

Ans. 4

Sol. Bromine water test

Phenol + Br_2 water $\rightarrow$ white ppt,

Alcohol + Br_2 water $\rightarrow$ No reaction

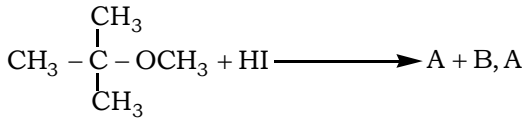
24. Match the following with their pKa values

	Acid	pKa
I	Phenol	a) 16
II	p-Nitrophenol	b) 0.78
III	Ethyl alcohol.	c) 10
IV	Picric acid	d) 7.1

1) I - a, II - d, III - c, IV – b
2) I-a, II - b, III - c, IV – d
3) I-b, II - a, III - d, IV – c
4) I-c, II -d, III - a, IV – b

Ans. 4

Sol. Conceptual

25. 

Respectively are

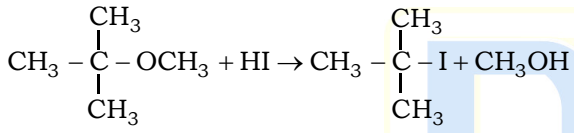
1) $A = CH_3OH, B = CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - I$

2) $A = CH_3 - I, B = CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - I$

3) $A = CH_3OH, B = CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - OH$

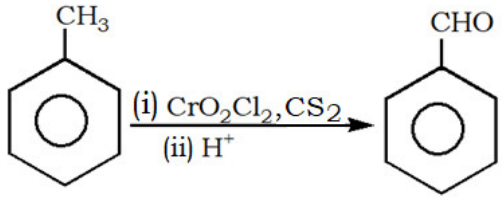
4) $A = CH_3 - I, B = CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - OH$

Ans. 1

Sol. 

26. Oxidation of Toluene with chromyl chloride followed by hydrolysis gives Benzaldehyde. This reaction is known as
1) Kolbe reaction
2) Stephen reaction
3) Cannizzaro Reaction
4) Etard Reaction

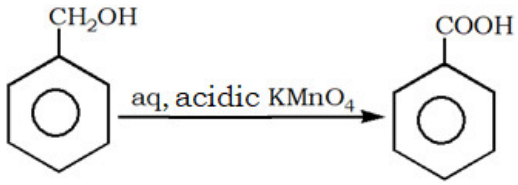
Ans. 4

Sol. 

27. Statement-I: Reduction of ester by DIBAL-H followed by hydrolysis gives aldehyde.
Statement-II: Oxidation of benzyl alcohol with aqueous $KMnO_4$ leads to the formation of Benzaldehyde.
Among the above statements, identify the correct statement.
1) Statement-I is true but statement-II is false
2) Statement-I is false but statement-II is true
3) Both statements-I and II are true
4) Both statements-I and II are false

Ans. 1

Sol. $R - COOR^1 \xrightarrow[H_3O^+]{DIBAL-H} R - CHO + R^1 - OH$



28. Arrange the following compounds in their decreasing order of reactivity towards Nucleophilic addition reaction.
$CH_3COCH_3, CH_3COC_2H_5, CH_3CHO$
1) $CH_3COCH_3 > CH_3CHO > CH_3COC_2H_5$
2) $CH_3COC_2H_5 > CH_3COCH_3 > CH_3CHO$
3) $CH_3CHO > CH_3COC_2H_5 > CH_3COCH_3$
4) $CH_3CHO > CH_3COCH_3 > CH_3COC_2H_5$

Ans. 4

Sol. Reactivity order towards Nucleophilic addition reactions

$CH_3 - CHO > CH_3 - CO - CH_3 > CH_3 - CO - C_2H_5$

29. Which of the following has most acidic Hydrogen?
1) Dichloroacetic acid 2) Trichloroacetic acid
3) Chloroacetic acid 4) Propanoic acid

Ans. 2

Sol. (Trichloroacetic acid)

$$Cl - \underset{\underset{Cl}{|}}{\overset{\overset{Cl}{|}}{C}} - COOH$$

30. Which of the following reagents are suitable to differentiate Aniline and N -methylaniline chemically?
1) Br_2 water
2) Conc. Hydrochloric acid and anhydrous zinc chloride
3) Chloroform and Alcoholic potassium Hydroxide
4) Acetic anhydride

Ans. 3

Sol. Chloroform and Alc. KOH

31. Which of the following reaction/s does not yield an amine?

I. $R-X+\underset{(alc)}{NH_3} \xrightarrow{\Delta}$

II. $R-C\equiv N \xrightarrow[Na(Hg)/C_2H_5OH]{H_2/Ni}$

III. $R-C\equiv N+H_2O \xrightarrow{H^+}$

IV. $R-\overset{\overset{O}{||}}{C}-NH_2+4[H] \xrightarrow[ii)\ H_3O^+]{i)\ LiAlH_4}$

1) Only II 2) Only III
3) Both II and IV 4) Both I and IV

Ans. 2

Sol. $R-C\equiv N+H_2O \xrightarrow{H^+} RCOOH$

32. Match the compounds given in List-I with the items given in List-II

List-I	List-II
(I) Benzenesulphonyl Chloride	(a) Zwitterion
(II) Sulphanilic acid	(b) Hinsberg reagent
(III) Alkyl Diazonium salts	(c) Dyes
(IV) Aryl Diazonium salts	(d) Conversion to alcohols

1) I-a, II-c, III-b, IV-d 2) I-c, II-a, III-d, IV-b
3) I-b, II-a, III-d, IV-c 4) I-c, II-b, III-a, IV-d

Ans. 3

Sol. Conceptual

33. The number of orbitals associated with 'N' shell of an atom is

1) 32 2) 3 3) 4 4) 16

Ans. 4

Sol.

K	L	M	N
S	S,P	S,P,d	S,P,d,f
1	1+3	1+3+5	1+3+5+7

Total number of orbitals in N^{th} shell = 16

(Or)

Total number of orbitals in the given shell= n^2

$n=4$ then $n^2=16$

34. According to the Heisenberg's Uncertainty principle, the value of $\Delta v.\Delta x$ for an object whose mass is 10^{-6} kg is

$\left(h=6.626\times10^{-34}Js\right)$

1) $4.0\times10^{-26}\ m^{-2}\ s^{-1}$ 2) $3.5\times10^{-25}\ m^{-2}\ s^{-1}$
3) $5.2\times10^{-29}\ m^{-2}\ s^{-1}$ 4) $3.0\times10^{-24}\ m^{-2}\ s^{-1}$

Ans. 3

Sol. $\Delta v.\Delta x=\dfrac{h}{4\pi m}$

$=\dfrac{6.626\times10^{-34}}{4\times3.14\times10^{-6}}$

$=\dfrac{6.626\times10^{-28}}{12.56}$

$=0.527\times10^{-28}$

$=5.27\times10^{-29}\ m^2s^{-1}$

35. Given below are two statements.

Statement-I: Adiabatic work done is positive when work is done on the system and internal energy of the system increases

Statement-II: No work is done during free expansion of an ideal gas

In the light of the above statements, choose the correct answer from the options given below.

1) Statement-I is true but Statement-II is false
2) Statement-I is false but Statement-II is true
3) Both Statement-I and Statement-II are true
4) Both Statement-I and Statement-II are false

Ans. 3

Sol. $w=+ve, q=0$

$\Delta U=w+q$

$\boxed{\Delta U=w}$

36. Which one of the following reactions has $\Delta H=\Delta U$?

1) $C_6H_6(\ell)+\dfrac{15}{2}O_2(g)\rightarrow6CO_2(g)+3H_2O(\ell)$

2) $2HI(g)\rightleftharpoons H_2(g)+I_2(g)$

3) $N_2(g)+3H_2(g)\rightleftharpoons2NH_3(g)$

4) $CaCO_3(s)\xrightarrow{\Delta}CaO(s)+CO_2(g)$

Ans. 2

Sol. $\Delta H-\Delta U=\Delta ng\,RT \qquad (\Delta ng=0)$

$\Delta H-\Delta U=0$

$\Delta H=\Delta U$

37. Identify the **incorrect** statements among the following:

(a) All enthalpies of fusion are positive.

(b) The magnitude of enthalpy change does not depend on the strength of the intermolecular interactions in the substance undergoing phase transformations.

(c) When a chemical reaction is reversed, the value of ΔrH^0 is reversed in sign.

(d) The change in enthalpy is dependent of path between initial state (reactants) and final state (products)

(e) For most of the ionic compounds, $\Delta_{sol}H^0$ is negative.

1) b, d and e 2) a, d and e
3) a and c only 4) a, b and d

Ans. 1

Sol. Conceptual

38. Which of the following statements is/are true about equilibrium?

(a) Equilibrium is possible only in a closed system at a given temperature

(b) All the measurable properties of the system remain constant at equilibrium.

(c) Equilibrium constant for the reverse reaction is the inverse of the equilibrium constant for the reaction in the forward direction.

1) Only c 2) a, b and c
3) Only a 4) Only b

Ans. 2

Sol. Conceptual

39. According to Le Chatelier's principle, in the reaction $CO(g)+3H_2(g) \rightleftharpoons CH_4(g)+H_2O(g)$, the formation of methane is favoured by

(a) increasing the concentration of CO

(b) increasing the concentration of H_2O

(c) decreasing the concentration of CH_4

(d) decreasing the concentration of H_2

1) b and d 2) a and d
3) a and b 4) a and c

Ans. 4

Sol. increasing the concentration of CO and decreasing the concentration of CH_4.

40. The equilibrium constant at 298 K for the reaction $A+B \rightleftharpoons C+D$ is 100. If the initial concentrations of all the four species were 1 M each, then equilibrium concentration of D (in $molL^{-1}$) will be

1) 1.818 2) 1.182
3) 0.818 4) 0.182

Ans. 1

Sol.

$$A + B \rightleftharpoons C + D$$

initial	1	1	1	1
At eqb	1-x	1-x	1+x	1+x

$$K_c = \frac{[C][D]}{[A][B]}$$

$$100 = \frac{(1+x)(1+x)}{(1-x)(1-x)}$$

$$\Rightarrow 10^2 = \left[\frac{(1+x)}{(1-x)}\right]^2$$

$$\Rightarrow 10(1-x) = 1+x$$

On solving, we get $x = 0.818$

$$\therefore [D] = 1+x = 1.818$$

41. Among the following 0.1 m aqueous solutions, which one will exhibit the lowest boiling point elevation, assuming complete ionization of the compounds in solution?

1) Aluminium sulphate
2) Potassium sulphate
3) Sodium chloride
4) Aluminium chloride

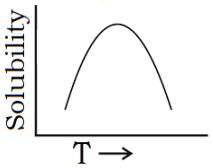
Ans. 3

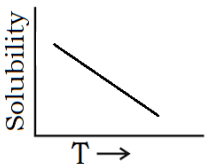
Sol. $m = 0.1$

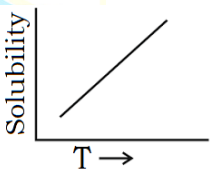
$\Delta T_b \propto$ concentration

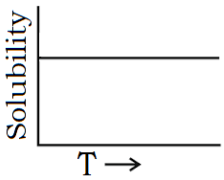
i.e., lowest boiling elevation shown by solution with lowest concentration

42. Variation of solubility with temperature T for a gas in liquid is shown by the following graphs. The correct representation is

1) 

2) 

3) 

4) 

Ans. 2

Sol. Solubility of gas in liquid decreases with temperature.

43. 180 g of glucose, $C_6H_{12}O_6$, is dissolved in 1 kg of water in a vessel. The temperature at which water boils at 1.013 bar is _____ (given, K_b for water is 0.52 K kg mol^{-1}. Boiling point for pure water is 373.15 K)

1) 373,15 K 2) 373.0 K
3) 373.202 K 4) 373.67 K

Ans. 4

Sol.

$w_2 = 180gm$

$M_2 = 180gm$

$w_1 = 1kg$

$K_b = 0.52\,K.kg.mol^{-1}$

$T_b^0 = 373.15K$

$\Delta T_b = K_b m$

$= 0.52\left[\frac{180}{180} \times \frac{1000}{1000}\right] = 0.52$

$T_b^s = T_b^0 + 0.52$

$= 373.15 + 0.52$

$= 373.67k$

44. If N_2 gas is bubbled through water at 293 K, how many moles of N_2 gas would dissolve in 1 litre of water? Assume that N_2 exerts a partial pressure of 0.987 bar.
[Given K_H for N_2 at 293 K is 76.48 K bar]

1) 7.16×10^{-5} 2) 7.16×10^{-4}
3) 7.16×10^{-3} 4) 0.716×10^{-3}

Ans. 2 & 4

Sol. $P_{N_2} = 0.987\,\text{bar}$

$K_H = 76.48\text{K.bar.} = 76.48\times10^3\,\text{bar}$

Henry's law $P = K_H X$

$$X = \frac{P}{K_H} = \frac{0.987}{76.48\times10^3}$$

$$\frac{n_{N_2}}{n_{N_2}+n_{water}} = 0.0129\times10^{-3}$$

$n_{N_2} <<< n_{water}$

Hence

$n_{N_2} = n_{water}\times0.0129\times10^{-3}$

$= \frac{1000}{18}\times0.0129\times10^{-3}$

$= 0.000716$

$= 0.716\times10^{-3}$

45. The correct statement/s about Galvanic cell is/are
(a) Current flows from cathode to anode
(b) Anode is positive terminal
(c) If $E_{cell} < 0$, then it is spontaneous reaction
(d) Cathode is positive terminal

1) a, b and c 2) a and d only
3) b only 4) a and b only

Ans. 2

Sol. In a galvanic cell,
Anode is negative terminal
Cathode is positive terminal
If $E_{cell} < 0$, then it is non-spontaneous reaction

46. The electronic conductance depends on
1) The number of valence electrons per atom
2) Concentration of the electrolyte
3) Size of the ions
4) Nature of electrolyte added

Ans. 1

Sol. Conceptual

47. For a given half cell, $Al^{3+} + 3e^- \rightarrow Al$ on increasing the concentration of aluminium ion, the electrode potential will
1) No change
2) First increase then decrease
3) Increase
4) Decrease

Ans. 3

Sol. $$E_{Al^{3+}/Al} = E^0_{Al^{3+}/Al} - \frac{0.059}{3}\log\frac{1}{\left[Al^{3+}\right]}$$

$$\therefore E_{Al^{3+}/Al} \alpha \left[Al^{3+}\right]$$

48. Match the following and select the correct option for the quantity of electricity, in $Cmol^{-1}$, required to deposit various metals at cathode.

List -I	List -II
a) Ag^+	i. 386000 $Cmol^{-1}$
b) Mg^{2+}	ii. 289500 $Cmol^{-1}$
c) Al^{3+}	iii. 96500 $Cmol^{-1}$
d) Ti^{4+}	iv. 193000 $Cmol^{-1}$

1) a-iii, b-iv, c-ii, d-i 2) a-iv, b-iii, c-i, d-ii
3) a-i, b-ii, c-iii, d-iv 4) a-ii, b-I, c-iv, d-iii

Ans. 1

Sol. $Ag^+ \Rightarrow 96500\ Cmol^{-1}$

$Mg^{+2} = 2\times96500$

$= 193000\ Cmol^{-1}$

$Al^{+3} \Rightarrow 3\times96500$

298500

$Ti^{+4} = 4\times965000$

$= 3866000$

49. Catalysts are used to increase the rate of a chemical reaction. Because it
1) Decrease the activation energy of the reaction
2) Brings about improper orientation of reactant molecules
3) Increases the potential energy barrier
4) Increases the activation energy of the reaction

Ans. 1

Sol. Catalyst decrease the activation energy of the reaction and increase the rate of

50. Half -life of a first order reaction is 20 seconds and initial concentration of reactant is 0.2M. The concentration of reactant left after 80 seconds is

1) 0.05 M 2) 0.0125 M
3) 0.2 M 4) 0.1M

Ans. 2

Sol. 0.2 M

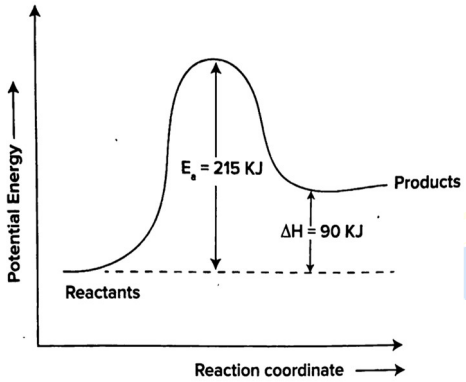
$\xrightarrow{20\text{ sec}} 0.1\text{M} \xrightarrow{20\text{ sec}} 0.05\text{M} \xrightarrow{20\text{ sec}}$

$\rightarrow 0.025\text{M} \xrightarrow{20\text{ sec}} 0.0125\text{M}$

Total time $= 4 \times 20\,\text{sec} = 80\,\text{sec}$ concentration of reactant

Amount of substance left =0.0125M

51. In the given graph, E_a for the reverse reaction will be



1) 215 KJ 2) 90 KJ
3) 305 KJ 4) 125 KJ

Ans. 4

Sol. $\Delta H = (E_a)_f - (E_a)_b$

$90 = 215 - (E_a)_b$

$(E_a)_b = 215 - 90 = 125\text{ KJ}$

52. For the reaction $2N_2O_{5(g)} \rightarrow 4NO_{2(g)} + O_{2(g)}$ initial concentration of N_2O_5 is 2.0 mol L^{-1} and after 300 min, it is reduced to 1.4 mol L^{-1}. The rate of production of NO_2 (in mol L^{-1} min^{-1}) is

1) 4×10^{-4} 2) 2.5×10^{-3}
3) 4×10^{-3} 4) 2.5×10^{-4}

Ans. 3

Sol. Rate of production of

$\frac{d[NO_2]}{dt} = ?$

$\Rightarrow -\frac{1}{2}\frac{d[N_2O_5]}{dt} = +\frac{1}{4}\frac{d[NO_2]}{dt}$

$\Rightarrow \frac{d[NO_2]}{dt} = \frac{4}{2}\frac{d[N_2O_5]}{dt} \Rightarrow \frac{4}{2} \times \frac{2-1.4}{300}$

$= 4 \times 10^{-3}\text{ mole.lit.min}^{-1}$

53. Which of the following methods of expressing concentration are unitless?

1) Molality and Mole fraction
2) Mass percent (W/W) and Molality
3) Molality and Molarity
4) Mole fraction and Mass percent (W/W)

Ans. 4

Sol. Mole fraction and mass percent (w/w) has no units because both are mass ratios

54. Select the INCORRECT statement/s from the following:

(a) 22 books have infinite significant figures.
(b) In the answer of calculation 2.5×1.25 has four significant figures.
(c) Zero's preceding to first non-zero digit are significant.
(d) In the answer of calculation 12.11+18.0+1.012 has three significant figures

1) (b) and (c) only 2) (b) and (d) only
3) (a) and (b) only 4) (b), (c) and (d)

Ans. 1

Sol. Conceptual

55. Given below are the atomic masses of the elements:

Element:	Li	Na	Cl	K	Ca	Br	Sr	I	Ba
Atomic Mass $(gmol^{-1})$:	7	23	35.5	39	40	80	88	127	137

Which of the following doesn't form triad?

1) Cl, Br, I 2) Cl, K, Ca
3) Li, Na, K 4) Ba, Sr, Ca

Ans. 2

Sol. Conceptual

56. The change in hybridisation (if any) of the ' Al ' atom in the following reaction is

$AlCl_3 + Cl^- \rightarrow AlCl_4^-$

1) sp^2 to sp^3 2) sp^3 to sp^3d
3) sp^3 to sp^2
4) No change in the hybridisation state

Ans. 1

Sol. Hybridisation changes from sp^2 to sp^3

57. Match List-I with List-II and select the correct option:

List-I (Molecule /ion)	List-II (Bond order)
(a) NO	(i) 1.5
(b) CO	(ii) 2.0
(c) O_2^-	(iii) 2.5
(d) O_2	(iv) 3.0

1) a-i, b-iv, c-iii, d-ii 2) a-ii, b-iii, c-iv, d-i
3) a-iv, b-iii, c-ii, d-i 4) a-iii, b-iv, c-i, d-ii

Ans. 4

Sol.

Molecule/ion	Bond order
a) NO $(15e^-)$	2.5
b) CO $(14e^-)$	3.0
c) O_2^- $(17e^-)$	1.5
d) O_2 $(16e^-)$	2.0

58. The electronic configuration of X and Y are given below:

$X: 1s^2 2s^2 2p^6 3s^2 3p^3$

$Y: 1s^2 2s^2 2p^6 3s^2 3p^5$

Which of the following is the correct molecular formula and type of bond formed between X and Y ?

1) X_2Y_3, coordinate bond
2) XY_3, covalent bond
3) X_2Y, covalent bond
4) X_3Y, ionic bond

Ans. 2

Sol. $X = +3$

$Y = -1$

Compound formula XY_3 covalent

59. Match List-I with List – II

List-I (Types of redox reactions)	**List-II (Examples)**
(a) Combination reaction	(i) $C\ell_{2(g)} + 2Br^-_{(aq)} \rightarrow 2C\ell^-_{(aq)} + Br_{2(\ell)}$
(b) Decomposition reaction	(ii) $2H_2O_{2(aq)} \rightarrow 2H_2O_{(\ell)} + O_{2(g)}$
(c) Displacement reaction	(iii) $CH_{4(g)} + 2O_{2(g)} \xrightarrow{\Delta} CO_{2(g)} + 2H_2O_{(\ell)}$
(d) Disproportio -nation Reaction	(iv) $2H_2O_{(\ell)} \xrightarrow{\Delta} 2H_{2(g)} + O_{2(g)}$

Choose the correct answer from the options given below.

1) a-ii, b-i, c-iv, d-iii 2) a-iii, b-iv, c-i, d-ii
3) a-iii, b-ii, c-i, d-iv 4) a-iv, b-iii, c-i, d-ii

Ans. 2

Sol.

$CH_4 + 2O_2 \xrightarrow{\Delta} CO_2 + 2H_2O$ – combination reaction

$2H_2O \xrightarrow{\Delta} 2H_2 + O_2$ – Decomposition reaction

$Cl_2 + 2Br^- \rightarrow 2Cl^- + Br_2$ – Displacement reaction

$2H_2O_2 \rightarrow 2H_2O + O_2$ – Disproportionation reaction

60. In the following pairs, the one in which both transition metal ions are colourless is

1) V^{2+}, Ti^{3+} 2) Zn^{2+}, Mn^{2+}
3) Ti^{4+}, Cu^{2+} 4) Sc^{3+}, Zn^{2+}

Ans. 4

Sol. SC^{3+}, Zn^{2+} – are colourless due to absence of unpaired electrons

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643 MARKS

CHANDANA N

NEET-2024 | RIMS - RAICHUR

642 MARKS

MOHD AFFAN HUSSAIN

NEET-2024 | SABVIMS - BENGALURU

642 MARKS

K RAKESH REDDY

NEET-2021 | SMC, CHENNAI

642 MARKS

NARENDRA BABU T V

NEET-2024 | CIMS - CHAMARAJANAGAR

641 MARKS

SIDDESH C S

NEET-2023 | BMC, BANGALORE

641 MARKS

SUDEEP TANKASALI

NEET-2022 | BMC, BANGALORE

641 MARKS

PRAJWAL PATIL B R

NEET-2022 | BMC, BANGALORE

641 MARKS

FIZA ANJUM I T

NEET-2024 |BMC - BANGALORE

640 MARKS

SACHIN R BHAJANTRI

NEET-2024 | BGS - BANGALORE

640 MARKS

MOKSHITH N G

NEET-2024 | CIMS - CHIKKABALLAPURA

640 MARKS

ARYA PRASAD

NEET-2024 | GIMS - GADAG

640 MARKS

MOHAMMED SOHEB DOTEGAR

NEET-2024 |VIMS - BELLARY

640 MARKS

VINOD B

NEET-2023 | MMCRI, MYSORE

640 MARKS

SRUJAN S PATIL

NEET-2022 | BMC, BANGALORE

640 MARKS

CHINMAY SWAMY A M

NEET-2022 | MMCRI, MYSORE

640 MARKS

YASHAS T S

NEET-2024 |SIMS - SHIMOGA

639 MARKS

KOMAL GURAV

NEET-2022 | KIMS, HUBLI

639 MARKS

SOUMYA R BADAI

NEET-2024 | CIMS - CHAMARAJANAGAR

638 MARKS

LEKHASHREE N S

NEET-2024 |GIMS - GADAG

638 MARKS

SANGAMESH APPANNA MAGADUM

NEET-2022 | MMCRI, MYSORE

638 MARKS

NATARAJ K V

NEET-2024 |RIMS - RAICHUR

637 MARKS

BUSHRA Z K

NEET-2022 | BMC, BANGALORE

637 MARKS

TEJA A

NEET-2022 | BMC, BANGALORE

637 MARKS

AKASH S PATHRI

NEET-2024 | GIMS - GADAG

636 MARKS

AMRUT GURUSIDDAPPA TORALI

NEET-2024 | GIMS - GADAG

636 MARKS

ADITYA

NEET-2024 | GIMS - GADAG

636 MARKS

TILAK V TALIKOTI

NEET-2024 | RIMS - RAICHUR

636 MARKS

NARESH GOWDA D

NEET-2024 | SDM - DHARWAD

636 MARKS

YANA P METI

NEET-2024 | VIMS - BELLARY

636 MARKS

YASHASVI

NEET-2023 | HIMS, HASSAN

636 MARKS

DHANYASHREE P

NEET-2023 | RIMS, RAICHUR

636 MARKS

E SNEHA

NEET-2022 | BMC, BANGALORE

636 MARKS

SHASHANK S K

NEET-2021 | BMC, BANGALORE

636 MARKS

CHANDAN B S

NEET-2021 | KIMS, HUBLI

636 MARKS

DILEEP KUMAR PAGI

NEET-2024 | GIMS - GADAG

635 MARKS

ADARSH KAMAGOUDA

NEET-2024 | KIMS - BANGALORE

635 MARKS

RAKSHA H N

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635 MARKS

PRABHURAJ MAHADEV M

NEET-2022 | BMC, BANGALORE

635 MARKS

AVINASH FAKEERAPPA Y

NEET-2022 | BMC, BANGALORE

635 MARKS

RAKESH M

NEET-2022 | MMCRI, MYSORE

635 MARKS

SURAJ B N MALALI

NEET-2024 | BMC - BANGALORE

633 MARKS

BANUSREE S

NEET-2024 | DR. BRAMC - BANGALORE

633 MARKS

MOHAMMAD ZAID

NEET-2021 | SABVIMS, BENGALURU

633 MARKS

ARJUN P J

NEET-2024 | CIMS - CHAMARAJANAGAR

632 MARKS

DAYENDRA A PATEL

NEET-2024 |GIMS - GADAG

632 MARKS

DARSHAN R MURAGUNDI

NEET-2024 |GIMS - GADAG

632 MARKS

VIKASGOUDA KUSHAL GOUDA PATIL

NEET-2024 |ESIMC - GULBARGA

632 MARKS

VAJRA

NEET-2024 | GMC - MAHABUBNAGAR

632 MARKS

GUJJULA HARSHITHA

NEET-2024 |NIMS - HYDERABAD

632 MARKS

VYKUNTAM SAI SATHVIKA

NEET-2022 | MMCRI, MYSORE

632 MARKS

MALLIKARJUNA B V

NEET-2024 | KIMS - UTTARA KANNADA

631 MARKS

KUSHI B M

NEET-2024 |CIMS - CHIKKABALLAPURA

631 MARKS

ANUSHREE M

NEET-2023 | KIMS, HUBLI

631 MARKS

SHIVAKUMAR NEELAKANTH H

NEET-2022 | KIMS, HUBLI

631 MARKS

SHRISHAIL SANASANI

NEET-2022 | KIMS, HUBLI

631 MARKS

SUJEET M ATHANI

NEET-2021 | SABVIMS, BENGALURU

631 MARKS

CHARITHA P S

NEET-2021 | CIMS, CHIKKAMAGALURU

630 MARKS

AMITH

NEET-2021 | GIMS, GADAG

630 MARKS

G SHASHANK

NEET-2021 | HIMS, HAVERI

630 MARKS

NISARGA T

NEET-2021 | KIMS, KOPPAL

630 MARKS

AMOGH B KOVALLI

NEET-2022 | JSSMC, MYSORE

630 MARKS

SHIVADEEP SS

NEET-2022 | MMCRI, MYSORE

630 MARKS

PANKAJ BASANAGOUD P

NEET-2021 | BMC, BENGALURU

630 MARKS

ARCHANA SUBHASH K

AND MANY MORE...

INDIVIDUAL ATTENTION, CARING AND MOTIVATION. WEEKLY, CUMMULATIVE AND GRAND TESTS IN THE NEET & JEE PATTERN

II PU SCIENCE ANNUAL EXAM - 2025 TOPPERS

592 MARKS 600

NEHA DINESH

20259152883

591 MARKS 600

SYED AKHYAR HUSSAINI

20259229052

590 MARKS

PREETHI S

20259152929

587 MARKS

ANANYA S BELKOTE

20259152711

586 MARKS

MOKSHALAKSHMI J

20259152858

586 MARKS

JAYANTH K S

20259142981

585 MARKS

DEEPAK ROOGI

20259142895

585 MARKS

PRATAP SIMHA N S

20259228895

585 MARKS

SPOORTHI

20259153027

585 MARKS

SHREYA S HARANAL

20259153006

585 MARKS

SUPRITA

20259153038

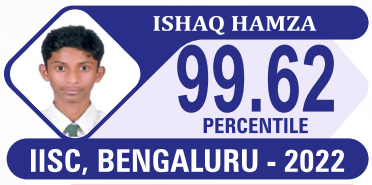
AND MANY MORE...

JEE MAIN TOPPERS OF DR ACADEMY

NIKHIL R

JEE Adv. SELECTION

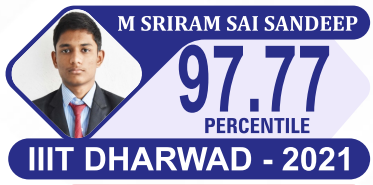
IIT DHANBAD - 2022



ISHAQ HAMZA

99.62 PERCENTILE

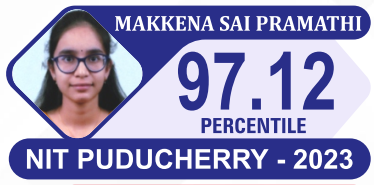
IISC, BENGALURU - 2022



M SRIRAM SAI SANDEEP

97.77 PERCENTILE

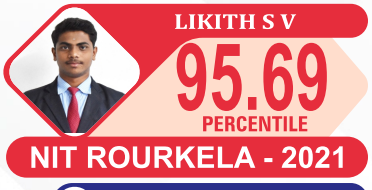
IIIT DHARWAD - 2021



MAKKENA SAI PRAMATHI

97.12 PERCENTILE

NIT PUDUCHERRY - 2023



LIKITH S V

95.69 PERCENTILE

NIT ROURKELA - 2021

SHAILAJA S GIRNI

NIT Surathkal

220310128625 - 2022

VINAYAGOUD KAVADI

NIT Surathkal

230310865486 - 2023

TARUN N

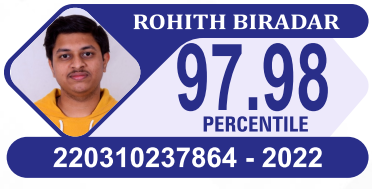
99.09 PERCENTILE

240310757600 - 2024

CHIRANTHAN REDDY V

98.87 PERCENTILE

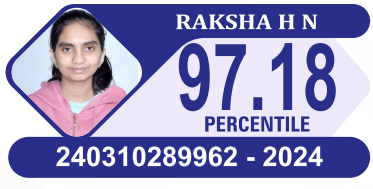
240310806545 - 2024



ROHITH BIRADAR

97.98 PERCENTILE

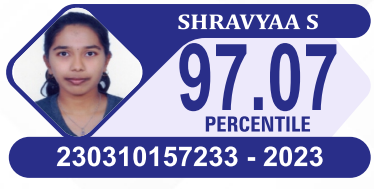
220310237864 - 2022



RAKSHA H N

97.18 PERCENTILE

240310289962 - 2024



SHRAVYAA S

97.07 PERCENTILE

230310157233 - 2023

JEE MAIN - 2025 PHASE-I ACHIEVERS

SUBJECTWISE TOP PERCENTILE

PHY 99.67

CHE 99.51

MAT 99.23

98.89

APP.NO. 250310925539

JAYANTH K S

97.67

APP.NO. 250310701826

HARSH B CHOUGALA

97.63

APP.NO. 250310059123

MOKSHALAKSHMI J

97.39

APP.NO. 250310057681

PREETHI S

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