



**Resonance**<sup>®</sup>  
Educating for better tomorrow

# JEE

## (Main)

**PAPER-1 (B.E./B. TECH.)**

# 2023

## **COMPUTER BASED TEST (CBT) Questions & Solutions**

**Date: 31 January, 2023 (SHIFT-2) | TIME : (3.00 p.m. to 6.00 p.m)**

**Duration: 3 Hours | Max. Marks: 300**






**SUBJECT: CHEMISTRY**

### **Resonance Eduventures Ltd.**

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : [www.resonance.ac.in](http://www.resonance.ac.in) | E-mail : [contact@resonance.ac.in](mailto:contact@resonance.ac.in) | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555  7340010333  [facebook.com/ResonanceEdu](https://facebook.com/ResonanceEdu)  [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu)  [www.youtube.com/resowatch](https://www.youtube.com/resowatch)  [blog.resonance.ac.in](https://blog.resonance.ac.in)

This solution was download from Resonance JEE (Main) 2023 Solution portal

**PART : CHEMISTRY**

31. In Dumas method for the estimation of N<sub>2</sub>, the sample is heated with copper oxide and the gas evolved is passed over :

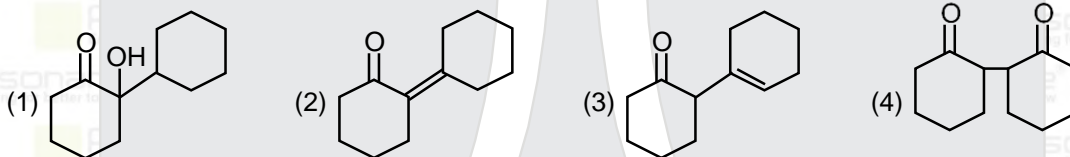
- (1) Copper gauze      (2) Pd      (3) Ni      (4) Copper oxide

NTA. (1)

RESO. (1)

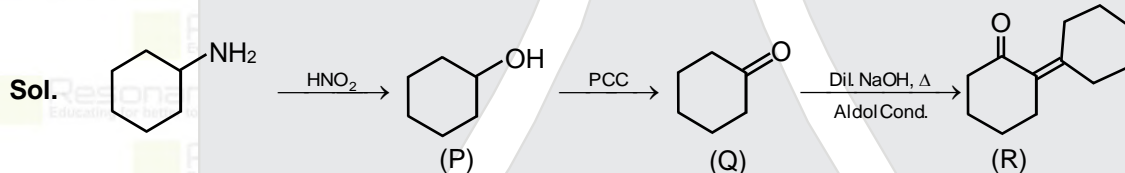
Sol. In Dumas method for the estimation of N<sub>2</sub>, the sample is heated with copper oxide and the gas evolved is passed over copper gauze to reduced traces of nitrogen oxides into nitrogen gas.

32. Cyclohexylamine when treated with nitrous acid yields (P). On treating (P) with PCC results in (Q). When (Q) is heated with dil. NaOH we get (R) The final product (R) is :



NTA. (2)

RESO. (2)

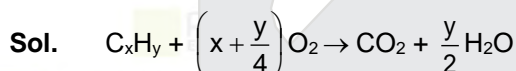


33. When a hydrocarbon A undergoes complete combustion it requires 11 equivalents of oxygen and produces 4 equivalents of water. What is the molecular formula of A ?

- (1) C<sub>11</sub>H<sub>8</sub>      (2) C<sub>11</sub>H<sub>4</sub>      (3) C<sub>5</sub>H<sub>8</sub>      (4) C<sub>9</sub>H<sub>8</sub>

NTA. (4)

RESO. (4)



$$a \left(x + \frac{y}{4}\right) a = \left(\frac{y}{2}\right) a$$

given  $\left(x + \frac{y}{4}\right) a = 11a$

$$x + \frac{y}{4} = 11$$

$$\left(\frac{y}{2}\right) a = 4a \quad y = 8, \text{ Then } x + \frac{8}{4} = 11$$

$$x = 9$$

Formula = C<sub>9</sub>H<sub>8</sub>

**Resonance Eduventures Ltd.**

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555  7340010333  facebook.com/ResonanceEdu  twitter.com/ResonanceEdu  www.youtube.com/resowatch  blog.resonance.ac.in

34. Incorrect statement for the use of indicator in acid-base titration is :

- (1) Methyl orange may be used for a weak acid vs weak base titration.
- (2) Phenolphthalein may be used for a strong acid vs strong base titration.
- (3) Methyl orange is a suitable indicator for a strong acid vs weak base titration.
- (4) Phenolphthalein is a suitable indicator for a weak acid vs strong base titration.

NTA. (1)

RESO. (1)

Sol. Methylorange is suitable indicator for strong acid vs strong base and strong acid vs weak base titration.  
Phenolphthalein is suitable indicator for strong acid vs strong base and weak acid vs strong base titration.

35. Arrange the following orbitals in decreasing order of energy.

- A.  $n = 3, l = 0, m = 0$
- B.  $n = 4, l = 0, m = 0$
- C.  $n = 3, l = 1, m = 0$
- D.  $n = 3, l = 2, m = 1$

The correct option for the order is :

- (1)  $D > B > C > A$
- (2)  $B > D > C > A$
- (3)  $A > C > B > D$
- (4)  $D > B > A > C$

NTA. (1)

RESO. (1)

Sol. In multi electronic species energy is decided on the basis of  $(n + l)$  rule. So increasing order of energy is  $3d > 4s > 3p > 3s$

36. Which of the following compounds are not used as disinfectants ?

- A. Chloroxyleneol
- B. Bithional
- C. Veronal
- D. Protosil
- E. Terpeneol

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

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

NTA. (2)

RESO. (2)

Sol. Protosil is an antibiotic, whereas veronal is a tranquilizer.

37. In the following halogenated organic compounds the one with maximum number of chlorine atoms in its structure is :

- (1) Chloral
- (2) Gammaxene
- (3) Chloropicrin
- (4) Freon-12

NTA. (2)

RESO. (2)

Sol. Chloral =  $\text{CCl}_3\text{CHO}$

Gammaxene =  $\text{C}_6\text{H}_6\text{Cl}_6$

Freon-12 =  $\text{CF}_2\text{Cl}_2$

DDT =  $\text{C}_{14}\text{H}_9\text{Cl}_5$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/resowatch](https://www.youtube.com/resowatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)

38. Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

**Assertion (A)** : The first ionization enthalpy of 3d series elements is more than that of group 2 metals

**Reason (R)** : In 3d series of elements successive filling of d-orbitals takes place.

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

(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**

(2) **(A)** is true but **(R)** is false

(3) **(A)** is false but **(R)** is true

(4) Both **(A)** and **(R)** are true but **(R)** is **not** the correct explanation of **(A)**

NTA. (1)

RESO. (1)

Sol.

Metal	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
IE (KJ/mol)	631	656	650	653	717	762	758	736	745	906

Metal	Be	Mg	Ca	Sr	Ba	Ra
IE (KJ/mol)	899	737	590	549	503	509

39. Match **List I** with **List II**

LIST I		LIST II	
A.	Physisorption	I.	Single Layer Adsorption
B.	Chemisorption	II.	20 – 40 kJ mol <sup>-1</sup>
C.	$N_2(g) + 3H_2(g) \xrightarrow{Fe(s)} 2NH_3(g)$	III.	Chromatography
D.	Analytical Application or Adsorption	IV.	Heterogeneous catalysis

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

(1) A-III, B-IV, C-I, D-II

(2) A-II, B-III, C-I, D-IV

(3) A-II, B-I, C-IV, D-III

(4) A-IV, B-II, C-III, D-I

NTA. (3)

RESO. (3)

Sol. Chemisorption is single layer. Physisorption have  $\Delta H = 20 - 40$  KJ/Mole

$N_2 + 3H_2 \xrightarrow{Fe} 2NH_3$  is example of Heterogeneous catalysis.

Analytical application or Adsorption is used is chromatography.

40. Evaluate the following statements for their correctness.

A. The elevation in boiling point temperature of water will be same for 0.1 M NaCl and 0.1 M urea.

B. Azeotropic mixture boil without change in their composition.

C. Osmosis always takes place from hypertonic to hypotonic solution.

D. The density of 32% H<sub>2</sub>SO<sub>4</sub> solution having molarity 4.09 M is approximately 1.26 g mL<sup>-1</sup>.

E. A negatively charged sol is obtained when KI solution is added to silver nitrate solution.

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

(1) B and D only

(2) B, D and E only

(3) A and C only

(4) A, B and C only

NTA. (1)

RESO. (1)

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/resowatch](https://www.youtube.com/resowatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)

- Sol.** (A)  $\Delta T_b$  is not same, as 'i' value is different for two solutions.  
 (B) Azeotropic mixture : Liquid mixtures which distill over without changes in composition are called constant boiling mixtures or Azeotropes or Azeotropic mixtures.  
 (C) Osmosis takes place from hypotonic to hypertonic.  
 (D)  $M = \frac{32 \times 10 \times 1.26}{98} \approx 4.09 \text{ M}$   
 (E) When KI is added to  $\text{AgNO}_3$  solution then positively charged sol is formed,

41. Given below are two statements :

**Statement I :** Upon heating a borax bead dipped in cupric sulphate in a luminous flame, the colour of the bead becomes green.

**Statement II :** The green colour observed is due to the formation of copper(I) metaborate

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

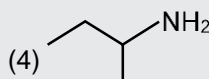
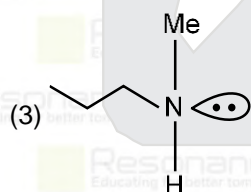
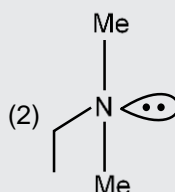
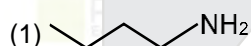
- (1) Both **Statement I** and **Statement II** are false  
 (2) Both **Statement I** and **Statement II** are true  
 (3) **Statement I** is false but **Statement II** is true  
 (4) **Statement I** is true but **Statement II** is false

**NTA.** (1)

**RESO.** (1)

**Sol.** As blue colour is obtained due to copper (II) metaborate while copper (I) metaborate is colourless.

42. An organic compound [A] ( $\text{C}_4\text{H}_{11}\text{N}$ ), shows optical activity and gives  $\text{N}_2$  gas on treatment with  $\text{HNO}_2$ . The compound [A] reacts with  $\text{PhSO}_2\text{Cl}$  producing a compound which is soluble in  $\text{KOH}$ . The structure of A is :



**NTA.** (4)

**RESO.** (4)

**Sol.** Given :

1. Compound is optically active  $\Rightarrow$  contains chiral carbon/Nitrogen.  
 2. Compound liberates  $\text{N}_2$  gas with  $\text{HNO}_2 \Rightarrow$  It is primary amine  
 3. Compound reacts with  $\text{PhSO}_2\text{Cl}$  and the product is soluble in  $\text{KOH} \Rightarrow$  It is primary amine.

Therefore only satisfy all the above conditions.

## Resonance Eduventures Ltd.

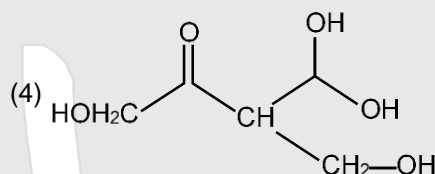
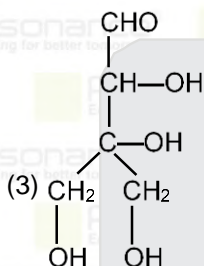
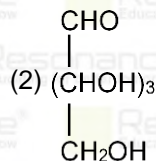
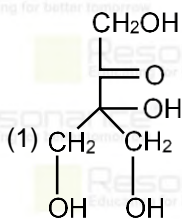
Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

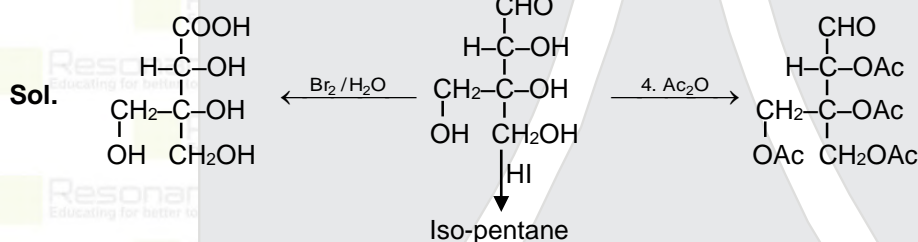
To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 7340010333 facebook.com/ResonanceEdu twitter.com/ResonanceEdu www.youtube.com/resowatch blog.resonance.ac.in

43. Compound A,  $C_5H_{10}O_5$ , given a tetraacetate with  $Ac_2O$  and oxidation of A with  $Br_2-H_2O$  gives an acid,  $C_5H_{10}O_6$ . Reduction of A with HI gives isopentane. The possible structure of A is :



NTA. (3)  
RESO. (3)



44. Given below are two statements :

**Statement I** :  $H_2O_2$  is used in the synthesis of Cephalosporin

**Statement II** :  $H_2O_2$  is used for the restoration of aerobic conditions to sewage wastes.

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

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

NTA. (2)

RESO. (2)

Sol.  $H_2O_2$  used in manufacture of cephalosporin & in oxidations of cyanides, restoration of aerobic conditions to sewage wastes, etc.

From NCERT. Page no. 294 (XI)

45. A hydrocarbon 'X' with formula  $C_6H_8$  uses two moles of  $H_2$  on catalytic hydrogenation of its one mole. On ozonolysis, 'X' yields two moles of methane dicarbaldehyde. The hydrocarbon 'X' is :

- (1) hexa-1, 3, 5-triene  
(2) 1-methylcyclopenta-1, 4-diene  
(3) cyclohexa-1, 3-diene  
(4) cyclohexa-1, 4-diene

NTA. (4)

RESO. (4)

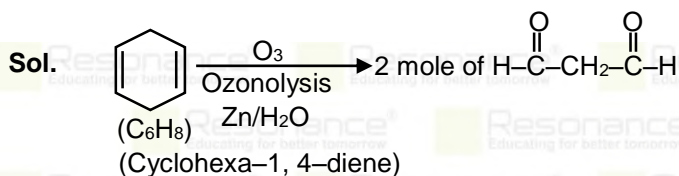
## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/resovatch](https://www.youtube.com/resovatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)



46. Which of the following elements have half-filled f-orbitals in their ground state ?

(Given : atomic number Sm - 62 ; Eu = 63; Tb = 65; Gd = 64, Pm = 61)

A. Sm      B. Eu      C. Tb      D. Gd      E. Pm

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

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

NTA. (3)

RESO. (3)

Sol. Sm (Z = 62) = 4f<sup>6</sup>s<sup>2</sup>

Eu (Z = 63) = 4f<sup>7</sup>6s<sup>2</sup>

Tb (Z = 65) = 4f<sup>9</sup>6s<sup>2</sup>

Gd (Z = 64) = 4f<sup>7</sup>5d<sup>1</sup>6s<sup>2</sup>

Pm (Z = 61) = 4f<sup>5</sup>6s<sup>2</sup>

Here Eu & Gd have half-filled configuration

47. The Lewis acid character of boron tri halides follows the order :

(1) BCl<sub>3</sub> > BF<sub>3</sub> > BBr<sub>3</sub> > BI<sub>3</sub>

(2) BI<sub>3</sub> > BBr<sub>3</sub> > BCl<sub>3</sub> > BF<sub>3</sub>

(3) BBr<sub>3</sub> > BI<sub>3</sub> > BCl<sub>3</sub> > BF<sub>3</sub>

(4) BF<sub>3</sub> > BCl<sub>3</sub> > BBr<sub>3</sub> > BI<sub>3</sub>

NTA. (2)

RESO. (2)

Sol. Due to back bonding acidic strength of boron tri halide follow following acidic strength order

BF<sub>3</sub> < BCl<sub>3</sub> < BBr<sub>3</sub> < BI<sub>3</sub>

48. The normal rain water is slightly acidic and its pH value is 5.6 because of which one of the following ?

(1) CO<sub>2</sub> + H<sub>2</sub>O → H<sub>2</sub>CO<sub>3</sub>

(2) N<sub>2</sub>O<sub>5</sub> + H<sub>2</sub>O → 2HNO<sub>3</sub>

(3) 2SO<sub>2</sub> + O<sub>2</sub> + 2H<sub>2</sub>O → 2H<sub>2</sub>SO<sub>4</sub>

(4) 4NO<sub>2</sub> + O<sub>2</sub> + 2H<sub>2</sub>O → 4HNO<sub>3</sub>

NTA. (1)

RESO. (1)

Sol. Rain water has pH 5 – 6 due to presence of H<sup>+</sup> ion formed by the reaction of rain water with carbon dioxide present in the atmosphere.

H<sub>2</sub>O(l) + CO<sub>2</sub>(g) ⇌ H<sub>2</sub>CO<sub>3</sub>

H<sub>2</sub>CO<sub>3</sub> ⇌ H<sup>+</sup> + HCO<sub>3</sub><sup>-</sup>

49. Which one of the following statements is incorrect ?

(1) van Arkel method is used to purify tungsten.

(2) The malleable iron is prepared from cast iron by oxidising impurities in a reverberatory furnace.

(3) Cast iron is obtained by melting pig iron with scrap iron and coke using hot air blast.

(4) Boron and Indium can be purified by zone refining method.

NTA. (1)

RESO. (1)






Sol. van Arkel method is used to purify Zirconium and Titanium.

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555  7340010333  facebook.com/ResonanceEdu  twitter.com/ResonanceEdu  www.youtube.com/resowatch  blog.resonance.ac.in

50. The element playing significant role in neuromuscular function and interneuronal transmission is :

- (1) Be (2) Mg (3) Ca (4) Li

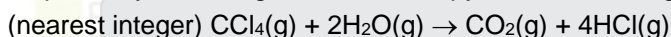
NTA. (3)

RESO. (3)

Sol. Calcium plays important role in neuromuscular function, interneuronal transmission. Cell membrane integrity and blood coagulation.

From NCERT.

51. Enthalpies of formation of  $\text{CCl}_4(\text{g})$ ,  $\text{H}_2\text{O}(\text{g})$ ,  $\text{CO}_2(\text{g})$  and  $\text{HCl}$  are  $-105$ ,  $-242$ ,  $-394$  and  $-92$   $\text{kJ mol}^{-1}$  respectively. The magnitude of enthalpy of the reaction given below is \_\_\_\_\_  $\text{kJ mol}^{-1}$ .



NTA. (173)

RESO. (173)

Sol.  $\Delta H_f^\circ = \Delta H_f^\circ(\text{CO}_2, \text{g}) + 4\Delta H_f^\circ(\text{HCl}) - \Delta H_f^\circ(\text{CCl}_4) - 2\Delta H_f^\circ(\text{H}_2\text{O}, \text{r})$   
 $= [-394] + 4[-92] + 105 - 2 \times [242]$   
 $= -394 - 368 + 105 + 484$   
 $= -173 \text{ kJ/mole}$

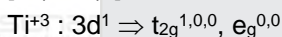
52. If the CFSE of  $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$  is  $-96.0$   $\text{kJ/mol}$ , this complex will absorb maximum at wavelength \_\_\_\_\_  $\text{nm}$ . (nearest integer)

Assume Planck' constant ( $h$ ) =  $6.4 \times 10^{-34}$  Js, Speed of light ( $c$ ) =  $3.0 \times 10^8$  m/s and Avogadro's constant ( $N_A$ ) =  $6 \times 10^{23}/\text{mol}$ .

NTA. (480)

RESO. (480)

Sol.  $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$



$$\text{CFSE} = [-0.4 n_{t_{2g}} + 0.6 n_{e_g}] \Delta_o$$

$$\frac{-96 \times 10^3}{6 \times 10^{23}} = -0.4 \Delta_o$$

$$\Delta_o = \frac{96 \times 10^3}{0.4 \times 6 \times 10^{23}} = 4 \times 10^{-19} \text{ J}$$

$$\Delta_o = \frac{hc}{\lambda} = 4 \times 10^{-19} \text{ J}$$

$$\lambda = \frac{6.4 \times 10^{-34} \times 3 \times 10^8}{4 \times 10^{-19}} = 4.8 \times 10^{-7} \text{ m}$$

$$\lambda = 480 \times 10^{-9} \text{ m}$$

$$\lambda = 480 \text{ nm}$$

53. The number of alkali metal(s), from Li, K, Cs, Rb having ionization enthalpy greater than  $400$   $\text{kJ mol}^{-1}$  and forming stable super oxide is \_\_\_\_\_.

NTA. (2)

RESO. (2)

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555  7340010333  facebook.com/ResonanceEdu  twitter.com/ResonanceEdu  www.youtube.com/resowatch  blog.resonance.ac.in



Sol.

Metal	Li	Na	K	Rb	Cs
IE (KJ/mol)	520	496	419	403	376

The super oxide  $O_2^-$  ion is stable only in the presence of large cations K, Rb, Cs.

K, Rb have  $IE_1 > 400$  kJ/mol.

54. At 298 K, the solubility of silver chloride in water is  $1.434 \times 10^{-3}$  g  $L^{-1}$ . The value of  $-\log K_{sp}$  for silver chloride is \_\_\_\_\_.

(Given mass of Ag is  $107.9$  g  $mol^{-1}$ , and mass of Cl is  $35.5$  g  $mol^{-1}$ )

NTA. (10)

RESO. (10)

Sol. Solubility(s) =  $\frac{1.434}{143.4} \times 10^{-3} = 10^{-5} M$

$$K_{sp}(AgCl) = (s)^2$$

$$K_{sp}(AgCl) = 10^{-10}$$

$$-\log(K_{sp}) = 10$$

55. A sample of a metal oxide has formula  $M_{0.83}O_{1.00}$ . The metal M can exist in two oxidation states +2 and +3. In the sample of  $M_{0.83}O_{1.00}$ , the percentage of metal ions existing in +2 oxidation state is \_\_\_\_\_% (nearest integer)

NTA. (59)

RESO. (59)

Sol. Let no. of ions of  $M^{+2} = x$   
 $M^{+3} = 0.83 - x$

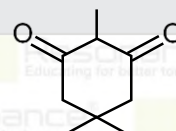
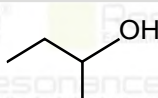
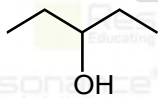
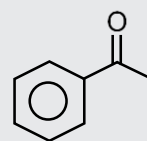
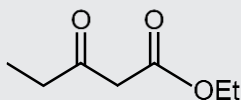
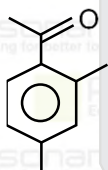
$$2x + 3(0.83 - x) + 1(-2) = 0$$

$$2x + 2.49 - 3x - 2 = 0$$

$$x = 0.49$$

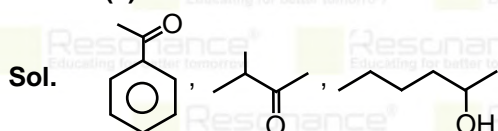
$$\%M^{2+} \text{ ions} = \frac{0.49}{0.83} \times 100 = 59.03$$

56. The number of molecules which gives haloform test among the following molecules is \_\_\_\_\_.



NTA. (3)

RESO. (3)



Aldehyde or ketones with acyl group  $\text{-(C=O-CH}_3\text{)}$  or  $\text{-(CH(OH)-CH}_3\text{)}$  group gives haloform test.

## Resonance Eduventures Ltd.

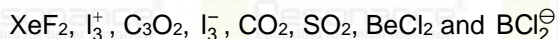
Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

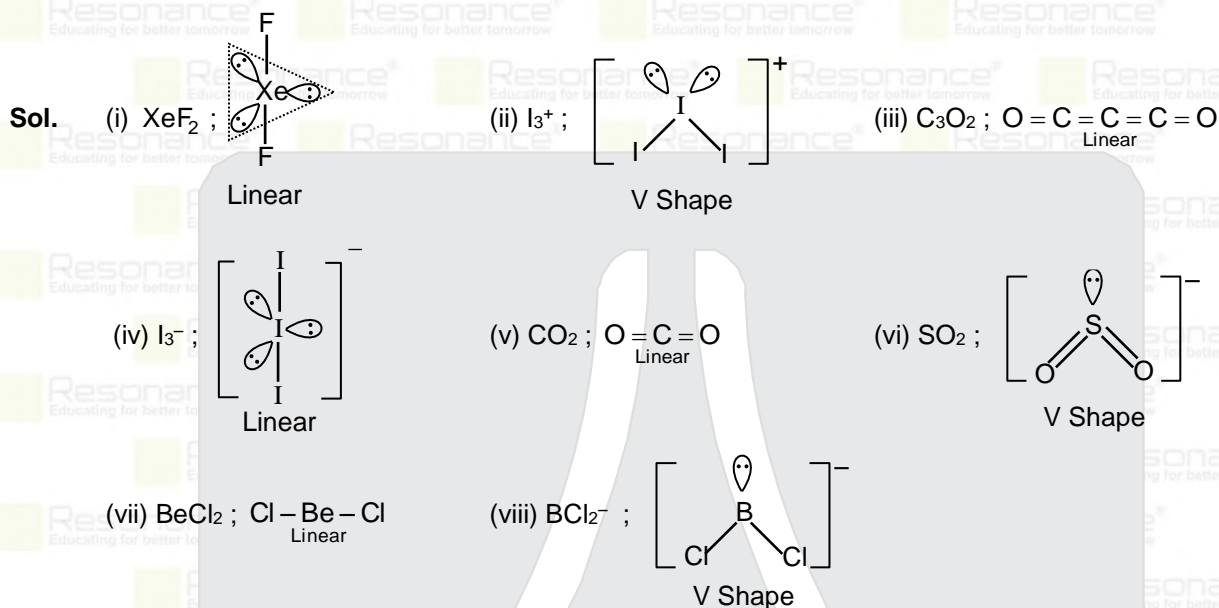
Toll Free : 1800 258 5555  7340010333  facebook.com/ResonanceEdu  twitter.com/ResonanceEdu  www.youtube.com/resowatch  blog.resonance.ac.in

57. Amongst the following, the number of species having the linear shape is \_\_\_\_\_.



NTA. (5)

RESO. (5)



58. The rate constant for a first order reaction is  $20 \text{ min}^{-1}$ . The time required for the initial concentration of the reactant to reduce to its  $\frac{1}{32}$  level is \_\_\_\_\_  $\times 10^{-2}$  min. (Nearest integer)

(Given :  $\ln 10 = 2.303$ ,  $\log 2 = 0.3010$ )

NTA. (17)

RESO. (17)

Sol.  $t_{1/2} = \frac{0.693}{k} = \frac{0.693}{20} = 0.03465 \text{ min}$

$$\left(\frac{1}{2}\right)^n = \left(\frac{1}{32}\right)$$

$$= \left(\frac{1}{2}\right)^5$$

No. of Half life = 5






Time required =  $0.03465 \times 5 = 0.17325 \text{ min} = 17.325 \times 10^{-2} \text{ min}$ .

## Resonance Eduventures Ltd.

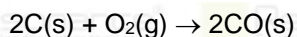
Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555  7340010333  facebook.com/ResonanceEdu  twitter.com/ResonanceEdu  www.youtube.com/resowatch  blog.resonance.ac.in

59. Assume carbon burns according to following equation :

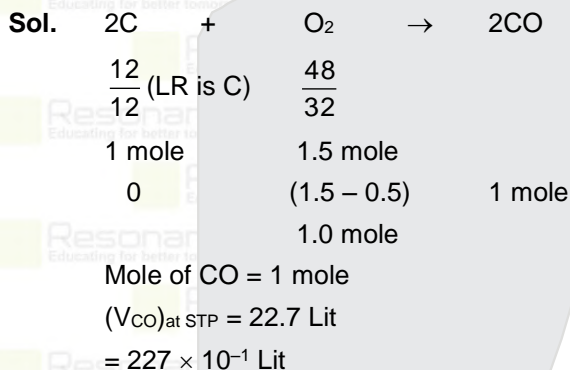


when 12 g carbon is burnt in 48g of oxygen, the volume of carbon monoxide produced is \_\_\_\_\_  
× 10<sup>-1</sup> L at STP [nearest integer]

[Given : Assume CO as ideal gas, Mass of C is 12g mol<sup>-1</sup>, mass of O is 16 g mol<sup>-1</sup> and molar volume of an idal gas at STP is 22.7 L mol<sup>-1</sup>]

NTA. (227)

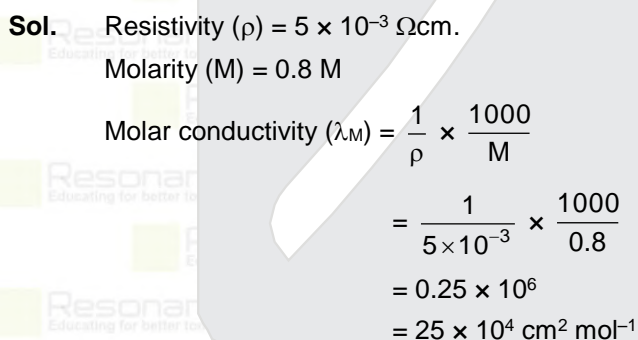
RESO. (227)



60. The resistivity of a 0.8 M solution of an electrolyte is 5 × 10<sup>-3</sup> Ω cm. Its molar conductivity is \_\_\_\_\_ ×  
10<sup>4</sup> Ω<sup>-1</sup> cm<sup>2</sup> mol<sup>-1</sup>. (Nearest integer)

NTA. (25)

RESO. (25)



## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 7340010333 facebook.com/ResonanceEdu twitter.com/ResonanceEdu www.youtube.com/resowatch blog.resonance.ac.in



**TO KNOW MORE**  
**Call: 0744-2777777,**  
**8441024095**

**TARGET: JEE (ADV.) 2023**

Polish your subject knowledge with the guidance of  
**Top Notch Sr. Faculty of Resonance**

**SPARK**  
**15 WEEKS COMPAC COURSE**  
**OFFLINE / ONLINE**

**CLASS STARTS**  
 6<sup>th</sup> FEBRUARY 2023



- ACADEMIC FEATURES**
- Course Duration: **15 Weeks**
  - Total No. of Lectures: **234** (P: 78 | C: 78 | M: 78)
  - Duration of One Lecture: **1.5 hrs.** (90 Minutes)
  - Classroom Teaching Hours.: **351 Hrs.**
  - Testing Duration: **60 Hrs.**
  - Total Academic Hours.: **411 Hrs.**

- Course Features**
- Study Material
  - Doubt Classes
  - Back up support of recorded lectures
  - Part/ Full Syllabus Test Series
- Facilities for Offline Students**
- In-house Computer Lab
  - Self Study Rooms for Boys & Girls

**TARGET: JEE (Main) 2023**

*Boost your Percentile with*

**PERCENTILE BOOSTER COURSE**  
**8 WEEKS COMPAC COURSE**  
**OFFLINE / ONLINE**

**CLASS STARTS**  
 6<sup>th</sup> FEBRUARY 2023



- COURSE FEATURES**
- Complete Course Coverage
  - 25 Chapter wise Test
  - Regular Practice through 33 Daily Online Practice Test
  - 5 Full Syllabus Test
  - 3 Joint Preparatory Test
  - Approx 2500 practice Que.
  - 113 Teaching hours
  - 99 Testing Hours
  - Regular Test discussion classes for concept clearance
  - Back up support of recorded lectures



**JEE (ADVANCED) 2022  
RESULT**

**RESONites ने फिर लहराया सफलता का परचम**

**STUDENTS FROM CLASSROOM PROGRAM (OFFLINE/ ONLINE)**

**AIR 6**

**KARTHIKEYA  
POLISETTY**  
Roll No.: 21925115

**AIR-1  
GEN-EWS**

**AIR 8**

**DHEERAJ  
KURUKUNDA**  
Roll No.: 21925114

**Students  
in TOP-100  
All India  
Ranks  
(AIRs)**



**AIR-11**  
DEEVYANSHU MALU  
Roll No.: 21219044



**AIR-15**  
ABHIJEET ANAND  
Roll No.: 21925116



**AIR-35**  
SANSKAR SHAURYA  
Roll No.: 21925113



**AIR-50**  
ANIRUDH GARG  
Roll No.: 21220122



**AIR-54**  
SOUMITRA D. NAYAK  
Roll No.: 21220554



**AIR-58**  
KANISHK SHARMA  
Roll No.: 21220454

**ADMISSIONS OPEN FOR ACADEMIC SESSION 2023-24**

**TARGET: JEE (Adv.) 2024**

for Class XII Passed Student

**VISHESH COURSE**

MODE: OFFLINE / ONLINE

**CLASS STARTS  
10<sup>th</sup> & 17<sup>th</sup> April**

**TARGET: JEE (Main) 2024**

for Class XII Passed Student

**ABHYAAS COURSE**

MODE: OFFLINE / ONLINE

**CLASS STARTS  
10<sup>th</sup> & 24<sup>th</sup> April**

**SCHOLARSHIP ON THE BASIS OF JEE (MAIN) 2023 %ILE / AIR**

**Resonance Eduventures Limited**  
REGISTERED & CORPORATE OFFICE: CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Rajasthan) - 324005  
Tel. No.: 0744-2777777, 2777700 | CIN: U80302RJ2007PLC024029

**Social Media Connect**

83067 41444 | youtube.com/@ResonanceEdu | t.me/OfficialResonance

facebook.com/ResonanceEdu | instagram.com/resonance\_edu | in.linkedin.com/school/resonance-eduventures-ltd/ | twitter.com/ResonanceEdu