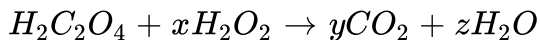# CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 37

Chemistry

1. What will be the value of x, y and z in the following equation?

$$H_2C_2O_4 + xH_2O_2 \rightarrow yCO_2 + zH_2O$$

A. 2, 1, 2

B. 1, 2, 2

C. 2, 2, 1

D. 1, 2, 1

Answer: B

2. The osmotic pressure of a sugar solution at $24°C$ is $2.5atm$. The concentration of the solution in mole per litre is

    A. 0.0821 moles/litre

    B. 1.082 moles/litre

    C. 0.1025 moles/litre

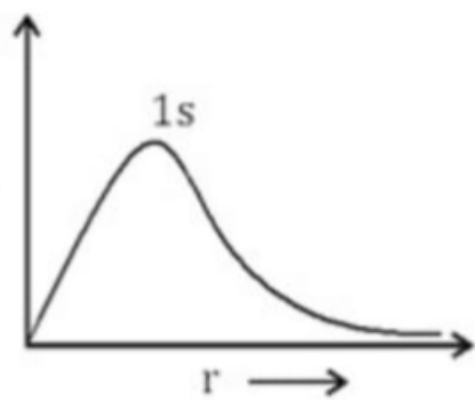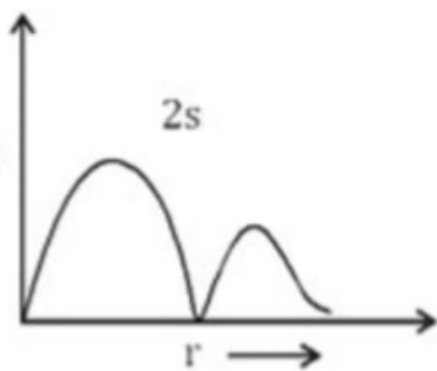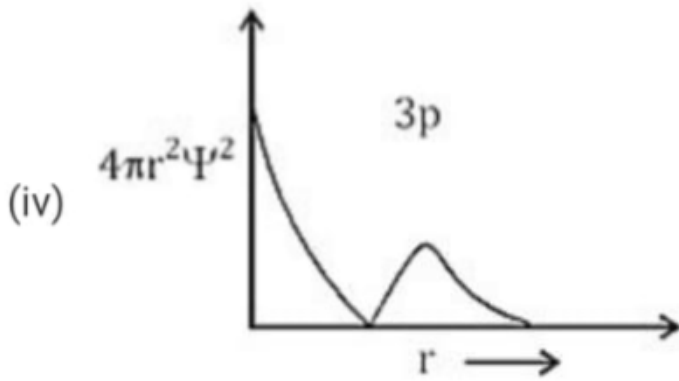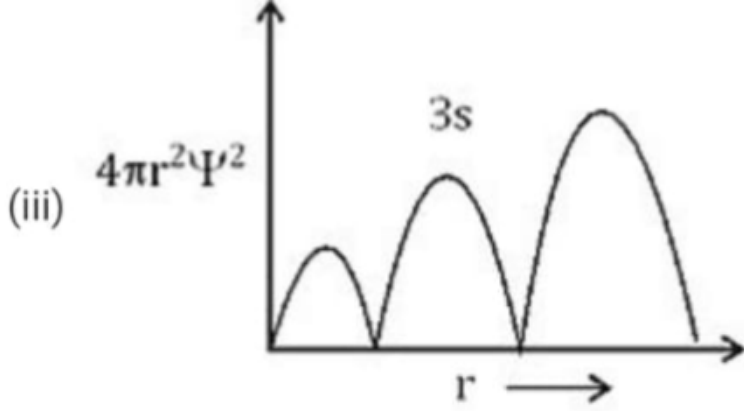   D. 0.0827 moles/litre

Answer: C

3. Which of the following plots of radial - probability function $4\pi^2\psi^2$ is /are correct

(i) $4\pi r^2 \psi^2$

1s

$r \longrightarrow$

(ii) $4\pi r^2 \psi^2$

2s

$r \longrightarrow$

(iii) $4\pi r^2 \Psi'^2$

3s

$r \longrightarrow$

(iv) $4\pi r^2 \Psi'^2$

3p

$r \longrightarrow$

A. Only i

B. ii and iii

C. I and iii

D. all

Answer: C

4. In P_4O_6 and P_4O_{10}, the number of oxygen atoms bonded to each phosphorus atoms are reppectively-
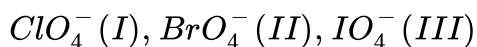
A. 3 and 3

B. 4 and 4

C. 3 and 4

D. 4 and 3

Answer: C

5. Consider the following perhalate ions in acidic medium

$ClO_4^- \ (I), \ BrO_4^- \ (II), \ IO_4^- \ (III)$

Arrange these in the decreasing order of oxidizing power

A. I gt II gt III

B. I gt III gt II

C. II gt I gt III

D. II gt III gt I

Answer: D

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6. The number of unit cells in 58.5 g of $NaCl$ is approximately

A. 6×10^{20}

B. 1.5×10^{23}

C. $6 \times 106(23)$

D. 0.5×10^{23}

Answer: B

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7. A sample of gas is compressed by an average pressure of 0.50 atmosphere so as to decrease its volume from $400cm^3$ to $200cm^3$. During the process 8.00 J of heat flows out to surroundings. The change in internal energy of the system is

A. $+2.13J$

B. $+10.13J$

C. $-2.13J$
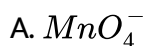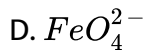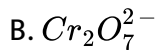
D. $-10.13J$

Answer: A

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8. In which of the following oxyanions the oxidation state of central atom is not same as that of its group number in periodic table?

A. MnO_4^-

B. $Cr_2O_7^{2-}$

C. VO_4^{3-}

D. FeO_4^{2-}

Answer: D

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9. At $300° C$, $FeCl_3$

    A. decomposes into $FeCl_2$ and Cl_2.

    B. decomposes into Fe and Cl_2.

    C. sublimes go give liquid $FeCl_3$

    D. sublimes to give gaseous dimmer $(FeCl_3)_2$.

Answer: D

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10. Match the colum (I) and (II) and select the correct answer using the codes given below.

Column-I	Column-II
(I) Argentite	(1) Halide ore
(II) Cuprite	(2) Carbonate ore
(III) Siderite	(3) Oxide ore
(IV) Carnallite	(4) Sulphide ore

A. i-1, ii-3, iii-4, iv-3
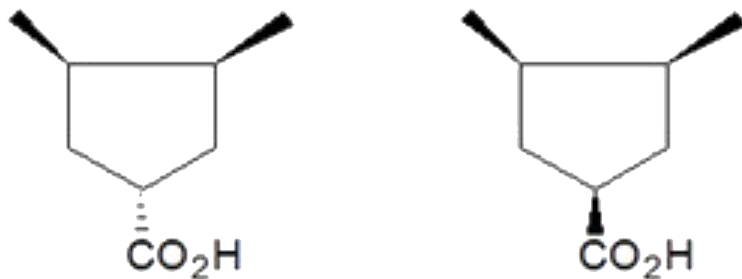
B. i-3, ii-4, iii-1, iv-3

C. i4, ii-3, iii-2, iv-1

D. i-4, iii-2, iii-3, iv-1

Answer: C

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11. Relationship between given pair is :

A. Identical

B. Enantiomer

C. Diastereomer

D. Consitutional isomer

Answer: C

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12. If density of vapours of a substance of molar mass $18 gm at 1 atm$

pressure and $500K$ is $0.36 kgm^{-3}$, then calculate the value of Z for the

vapours. (Take $R = 0.082 Latmmo \leq^{-1} K^{-1}$)

A. $\dfrac{41}{50}$

B. $\dfrac{50}{41}$

C. 1.8

D. 0.9
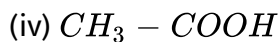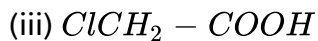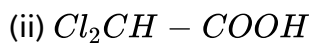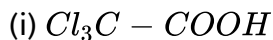
Answer: B

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13. Which one of the following is the correct order of acidic strength?

(i) $Cl_3C - COOH$

(ii) $Cl_2CH - COOH$

(iii) $ClCH_2 - COOH$

(iv) $CH_3 - COOH$

A. $iv > iii > ii > i$

B. $i > ii > iii > iv$

C. $i > iii > ii > iv$

D. $iv > ii > iii > i$

Answer: B

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14. Which of the following gives positive Libermann - nitroso test?

A. 2 - butanamine

B. N - ethyl -2 - pentanamine

C. N - methylpiperidine

D. N, N - dimethlycyclohexylamine

Answer: B

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15. $C_5H_{10} \xrightarrow{H_2/Ni} (X) \xrightarrow{Cl_2/hv} 3$ monochloro structural isomers for

compound C_5H_{10} how many pairs of geometrical isomers are possible

A. 1

B. 2

C. 3

D. None

Answer: A

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16. Hydrolysis of sucrose gives
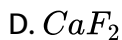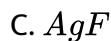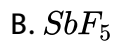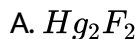
A. Two molecules of glucose

B. Two molecules of fructose

C. One molecule each of glucose and fructose

D. One molecule each of glucose and mannose

Answer: C

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17. Which of the following reagents may not be used to convert alkyl chlorides and alkyl bromides into alkylfluorides?

A. Hg_2F_2

B. SbF_5

C. AgF

D. CaF_2

Answer: D

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18. Which of the following enhances leathering property of soap?

A. Sodium carbonate

B. Sodium rosinate

C. Sodium stearate

D. Tri sodium phosphate

Answer: B

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19. Dehyration of alcohol to alkene by heating with conc. H_2SO_4, the initiation step is _____ followed with _____ mechanism.
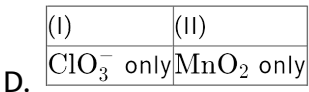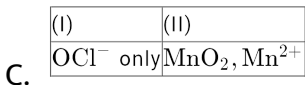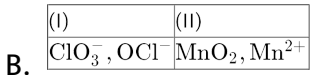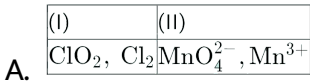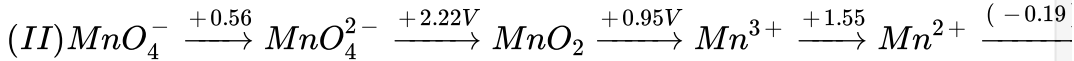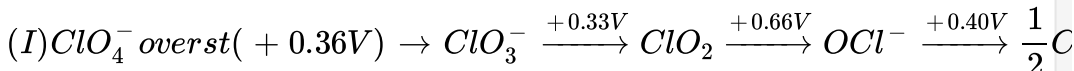
A. Elimination of water, free radical

B. Formation of an ester, free radical

C. Protonation of alcohol, carbocation

D. Protonation of alcohol, carbanion

Answer: C

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20. Find out the compounds that will disproportionate in their aqueous solution.

$$(I) ClO_4^- \ overst(+0.36V) \to ClO_3^- \xrightarrow{+0.33V} ClO_2 \xrightarrow{+0.66V} OCl^- \xrightarrow{+0.40V} \frac{1}{2}C$$

$$(II) MnO_4^- \xrightarrow{+0.56} MnO_4^{2-} \xrightarrow{+2.22V} MnO_2 \xrightarrow{+0.95V} Mn^{3+} \xrightarrow{+1.55} Mn^{2+} \xrightarrow{(-0.19}$$

A.

(I)	(II)
ClO_2, Cl_2	MnO_4^{2-}, Mn^{3+}

B.

(I)	(II)
ClO_3^-, OCl^-	MnO_2, Mn^{2+}

C.

(I)	(II)
OCl^- only	MnO_2, Mn^{2+}

D.

(I)	(II)
ClO_3^- only	MnO_2 only

Answer: A

21. Among the following how many of the molecules are linear.

$CO_2, NO_2^-, SO_2, N_3^-, C_2H_2, I_3^-, XeF_2, CS_2$

22. The ionisation constant for NH_4^+ in water is 5.0×10^{-10} at $25°C$. The rate constant for the reaction of NH_4^+ and OH^- to form NH_3 and H_2O at $25°C$ is 3.0×10^{10} $Lmol^{-1}s^{-1}$. The rate constant for proton transfer from water to NH_3 is $x \times 10^5$. The value of 'x' is

23. To an evacuated vessel with movable piston under external pressure of 1 atm 0.1 mole of He and 1.0 mole of an unknown compound vapour pressure 0.68 atm at $0°C$ are introduced Considering the ideal gas behaviour the total volume (in litre) of the gases at $0°C$ is close to .

24. How many type of products are obtained on thermal decomposition of alkaline earth metal nitrates.

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25. At 407 K the rate constant of a chemical reaction is $9.5 \times 10^{-5}s^{-1}$ and at 420 K, the rate constant is $1.9 \times 10^{-4}s^{-1}$. The frequency factor of the reaction is $x \times 10^5 s^{-1}$. The value of 'x' is. Report your answer by rounding it up to nearest whole number.

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