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CHEMISTRY

BOOKS - TS EAMCET PREVIOUS YEAR PAPERS

AP EAMCET SOLVED PAPER 2019 (22-04-2019, SHIFT-2)

Chemistry

1. The spectral line observed at 434 nm in the Balmer series of the hydrogen spectrum corresponds to a transition of an electron from the nth orbit. What is the value of n?

[Rydberg constant, $(R_H) = 109677 cm^{-1}$]

A. 3

B. 4

C. 5

D. 6

Answer: C

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2. The energy of 2s=orbitals of H, He and Li follow the order

A. $He < H < Li$

B. $Li < He < H$

C. $Li > He > H$

D. $He > H > Li$

Answer: B

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3. X and Y are two elements which form oxides of type XO_3 and Y_2O_5 with highest oxygen content. Identify the group numbers to which X and y belongs

A. 13, 15

B. 16, 15

C. 13, 17

D. 16, 17

Answer: B

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4. Match the following :

List I		List II
A. $[CrF_6]^{3-}$	I.	sp^3d^2, square planar
B. XeF_4	II.	sp^3d, square planar
C. PCl_5	III.	sp^3d^2, square pyramid
D. BrF_5	IV.	sp^3d, trigonal bipyramidal
	V.	sp^3d^2, octahedral

A. A B C D

III I IV V

B. A B C D

III I II V

C. A B C D

V I IV III

D. A B C D

V II IV III

Answer: C

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5. Identify the pair of species having same hybridisation for central atom, but possess different geometry.

A. $CH_4, \overset{+}{N}H_4$

B. $C_2H_2, BeCl_2$

C. PF_5, IF_5

D. $PC1_5, ClF_3$

Answer: D

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6. At T(K), a hypothetical gas consisting of 100 molecules has the following distribution of velocities. (N = Number of molecules, V = velocity

in cm s^{-1}).

N	V
2	4×10^3
2	4×10^8
10	$3 \times 10^{\cdot}$
20	5.5×10^5
25	4×10^5
35	6.8×10^6
5	2×10^7

The most probbable velocity (in cm s^{-1}) for this gas is

A. 4×10^3

B. 4×10^8

C. 6.8×10^6

D. 2×10^7

Answer: C

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7. 4.90 g of impure potassium chlorate on heating shows a weight loss of 0.384 g. What percent of the impure potassium chlorate has decomposed?

A. 20

B. 30

C. 40

D. 80

Answer: A

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8. The standard molar engthalpy of vaporisation of benzene $\Delta_{vap}H^{\circ}$ at 353 K is 30.8 kJ mol^{-1}.

If the benzene vapours behave as an ideal gas, the change in internal energy of vaporisation of 78 g of benzene at 353 K in kJ mol^{-1} is

A. 37.87

B. 27.87

C. 33.74

D. 17.87

Answer: B

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9. The equilibrium partial pressures of CO(g), $CO_2(g)$ in the equilibrium reaction

$CO_2(g) + C(s) \Leftrightarrow 2CO(g)$ at 1000 K are 0.66 and 0.15 bar respectively. The equilibrium constant K_c are apporximately is

A. 0.35

B. 2.9

C. 0.035

D. 0.29

Answer: C

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10. 20 mL of 0.2 M sodium hydroxide solution is added to 40 mL of 0.2 M acetic acid solution. What is the pH of the solution?

$(pK_a \text{ of } CH_3COOH = 4.8)$

A. 9.2

B. 4.8

C. 8.4

D. 2.9

Answer: B

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11. In acidic medium, aqueous potassium permanganate with hydrogen peroxide gives

A. Mn^{3+}, H_2

B. Mn^{2+}, O_2

C. Mn^{2+}, H_2

D. MnO_2, O_3

Answer: B

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12. Which of the following metal ions form the stable superoxide?

A. Li^+

B. Mg^{2+}

C. Na^+

D. K^+

Answer: D

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13. The products formed when borax dissolves in water is/are

A. $NaOH, H_3BO_3$

B. $Na_2\left[B_4O_5(OH)_4\right]$

C. NaH, B_2O_3

D. $B_2H_6, NaOH$

Answer: A

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14. Identify the correct statement.

A. Non-directional covalent bonds are present throughout the crystal lattice of diamond

B. Fullereness are the pure forms of carbon

C. C-C bond length in the layer of graphite is 154 pm

D. Carbon monoxide is a water soluble gas

Answer: B

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15. The concentration of fluroide ions in drinking water upto 1 ppm make the enamel on teeth much harder by converting $\underline{x}$ into fluorapatite. What is $\underline{x}$?

A. $\left[3Ca_3(PO_4)_2 \cdot CaF_2\right]$

B. $\left[3Ca_2(PO_4)_2 \cdot Ca(OH)_2\right]$

C. $\left[3Ca(OH)_2 \cdot Ca_3(PO_4)_2\right]$

D. $\left[Ca_3(PO_4)_2 \cdot 3CaF_2\right]$

Answer: B

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16. Nitrogen, sulphur and phosphorus present in organic compounds are detected by the formation of which of the following coloured substances respectively.

A. $\underset{\text{Prussian blue}}{Fe_4\left[Fe(CN)_6\right]_3}, \underset{\text{Violet}}{\left[Fe(CN)_5NOS\right]^{-4}}, \underset{\text{Yellow}}{(NH_4)_3PO_4 \cdot 12MoO_3}$

B. $\underset{\text{Prussian blue}}{Fe_4\left[Fe(CN)_6\right]_3}, \underset{\text{Blood red}}{\left[Fe(SCN)\right]^{2+}}, \underset{\text{Violet}}{(NH_4)_3PO_4 \cdot 12MoO_3}$

C. $\underset{\text{Blue}}{\left[Fe(CN)_6\right]^{4-}}, \underset{\text{Blood red}}{\left[Fe(SCN)\right]^{2+}}, \underset{\text{Yellow}}{(NH_4)_3PO_4 \cdot 12MoO_3}$

D. $\underset{\text{Blue}}{\left[Fe(CN)_6\right]^{4-}}, \underset{\text{Violet}}{\left[Fe(CN)_5NOS\right]^{-4}}, \underset{\text{Black}}{(NH_4)_3PO_4 \cdot 12MoO_3}$

Answer: A

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17. The number of electrophiles and nucleophiles present in the species given below are respectively.

$BF_3, CO_2, Me_3N, SO_3, CH_3\overset{+}{C}O, HS^-, NO_2^+, FeCl_3, H_2O$

A. 6, 3

B. 3, 6

C. 4, 5

D. 5, 4

Answer: A

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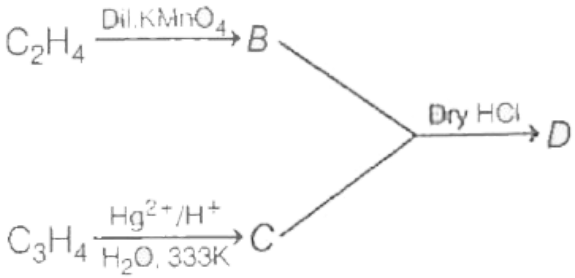
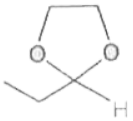
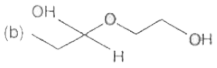
18. What is D in the following reaction sequence?



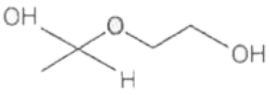
A.



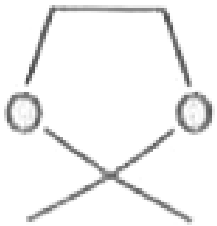
B.



C.



D.



Answer: D

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19. In which of the following reactions alkane is not formed?

A. $CH_3Br \xrightarrow{\text{Na/Dry ether}}$

B. $CH_3COONa \xrightarrow[\Delta]{NaOH\,/\,Ceo}$

C. $CH_3COONa \xrightarrow[\text{Electrolysis}]{H_2O}$

D. $BrCH_2 - CH_2Br \xrightarrow{Alc.KOH\,/\,\Delta}$

Answer: D

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20. An element forms a body centered cubic (bcc) lattice with edge length of 300 pm. If the density of the element is 7.2 g cm^{-3}, the number of atoms present in 324 g of it approximately is

A. 3.33×10^{23}

B. 6.66×10^{23}

C. 3.33×10^{24}

D. 6.66×10^{24}

Answer: C

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21. An ideal solution of hexane and heptane at $30^{\circ}C$ has a vapour pressure of 95 bar with hexane mole fraction 0.305. in vapour phase hexane mole fraction is 0.555. The vapour pressure of pure hexane and heptane at $30^{\circ}C$ respectively in bar are

A. 172.9, 60.9

B. 60.8, 172.9

C. 30.4, 86.5

D. 86.5, 30.4

Answer: A

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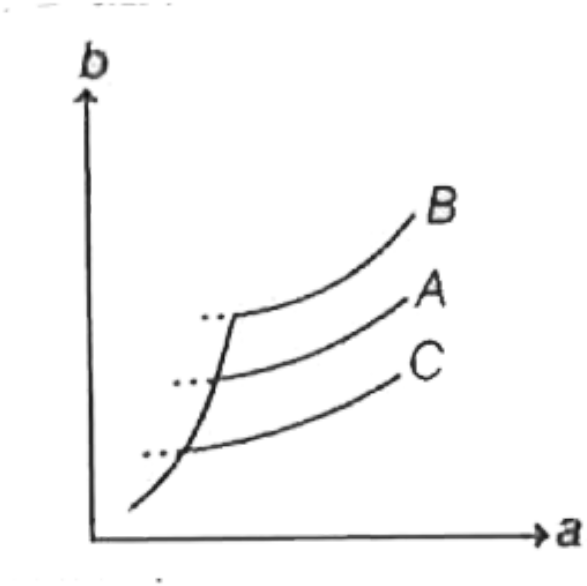
22. The vapour pressure of a solution (b) as a function of temperature (a) is plotted as a graph for two solutions of same molar concentration along with water as shown below. A, B and C are respectively.



A. $H_2NCONH_2, H_2O, NaCl$

B. $H_2O, H_2NCONH_2, NaCl$

C. $NaCl, H_2O, H_2NCONH_2$

D. $NaCl, H_2NCONH_2, H_2O$

Answer: A

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23. If E°_{cell} is 1.05 V, the emf of the cell for the following cell reaction

$Ni(s) + 2Ag^{+}(0.004M) \rightarrow$

$Ni^{2+}(0.16M) + 2Ag(s)$ at 298 K in V is

A. 0.932

B. 1.227

C. 0.732

D. 1.397

Answer: A

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24. Which one of the following is not the correct statement with respect to order of a reaction?

A. Order can be determined experimentally

B. Order of reaction is equal to sum of the powers of concentration terms in differential form of rate law.

C. Order does not change with change of pressure or termperature.

D. Order cannot be fractional.

Answer: D

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25. 300 mL of gold sol is mixed with 30 mL of 10% NaCl solution. The mass of haemoglobin in mg required to protect the gold sol from coagulation is (gold number of haemoglobin is 0.03)

A. 0.3

B. 0.09

C. 0.03

D. 0.9

Answer: D

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26. In froth-floatation process, what is the depressant used in the separation of sulphide ores of zinc and lead?

A. NaCl

B. Na_2CO_3

C. NaCN

D. Na_2SO_4

Answer: C

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27. In which of the following oxyacids of phosphorus, one P = 0, two P-H nd one P-OH bonds are present?

A. Phosphonic acid

B. Phosphinic acid

C. Orthophosphoric acid

D. Pyrophosphoric acid

Answer: B

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28. Identify the reaction in which SO_2 is not formed?

A. $Na_2SO_3(aq) + dil.\ H_2SO_4 \rightarrow$

B. $S + O_2 \quad \text{or} \quad air \xrightarrow{\text{Burnt}}$

C. $S + conc.\ H_2SO_4 \rightarrow$

D. $2NaCl + H_2SO_4 \rightarrow$

Answer: D

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29. In which of the following reactions oxygen gas is not formed?

A. $XeF_4 + O_2F_2 \rightarrow$

B. $XeF_4 + H_2O \rightarrow$

C. $XeF_6 + H_2O \rightarrow$

D. $XeF_2 + H_2O \rightarrow$

Answer: C

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30. The magnetic moment of which of the following complexes is maximum?

A. $\left[Co(NH_3)_6\right]^{3+}$

B. $\left[Ni(CN)_4\right]^{2-}$

C. $[CoF_6]^{3-}$

D. $[NiCl_4]^{2-}$

Answer: C

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31. A metal ions $\left(M^{n+}\right)$ forms octahedral $[ML_6]^{n+}$ and tetrahedral $[ML_4]^{n+}$ complexes with same ligand at different experimental conditions. The Δ_o of $[ML_6]^{n+}$ is 3 eV. What is the energy in eV of e_g orbital of $[ML_4]^{n+}$ complex?

A. $\frac{4}{5}$

B. $-\frac{4}{5}$

C. $\frac{8}{15}$

D. $-\frac{8}{15}$

Answer: B

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32. The catalyst triethyl aluminium and titanium tetrachloride finds use in the formation of the polymer

A. teflon

B. low density polythene

C. polyacrylonitrile

D. high density polythene

Answer: D

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33. Match the following :

List I		List II
A. Ascorbic acid	I.	Rickets
B. Vitamin D	II.	Muscular weakness
C. Vitamin B_1	III.	Convulsions
D. Vitamin E	IV.	Amla
	V.	Beri-beri

A. A B C D

I IV II III

B. A B C D

IV I III II

C. A B C D

I IV III II

D. A B C D

IV I V II

Answer: D

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34. Identify the correct pairs from the following :

I. Sodium benzoate	Antioxidant
II. Sodium stearate	Soap
III. Sodium lauryl sulphate	Antiseptic
IV. Alitame	Artificial Sweetener

A. II, IV

B. II, I

C. III, IV

D. II, III

Answer: A

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35. The number of monochloroderivatives possible, when 2, 2-dimethylpropane reacts with chlorine in the presence of UV-light is

A. 4

B. 3

C. 2

D. 1

Answer: D

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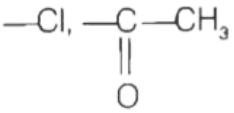
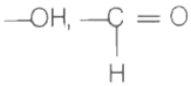
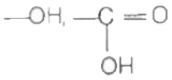
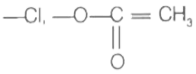
36. In the following sequence of reactions identify the functional groups present in the resulting compound Y

$$C_6H_5N_2Cl \xrightarrow[283K]{H_2O} X \xrightarrow[(ii)\,H_3O^+]{(i)\,CHCl_3/aq.NaOH} Y$$

A. 

B. 

C. 

D. 

Answer: B

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37. The correct set of reagents (X, Y, Z) required to convert benzene to m-nitrobenzoic acid are

A. $\underset{CO, HCl, anhy. AlCl_3}{X}$ $\underset{KMnO_4}{Y}$ $\underset{LiAlH_4}{Z}$

B. $HNO_3 + H_2SO_4$ $Br_2, AlCl_3$ KCN / H_3O^+

C. $Br_2, AlCl_3$ $HNO_3 + H_2SO_4 KCN / H_3O^+$

D.

$$CO, HCl, anhyd.\ AlCl_3 \qquad KMnO_4 \qquad conc.\ HNO_3 + conc.\ H_2SO_4$$

Answer: D

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38. The reduction products of an aldehyde, ketone and carboxylic acid in the presence of lithium aluminium hydride are respectively X, Y and Z. What are X, Y and Z?

A. $RCH(OH))R, RCH_2OH, RCH_2OH$

B. $RCH_2OH, RCH(OH)R, RCH_2OH$

C. $RCH_2OH, RCH_2OH, R_2CHOH$

D. R_2CHOH, RCH_3, RCH_2OH

Answer: B

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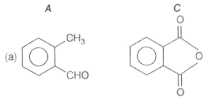
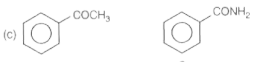
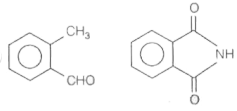
39. A carbonyl compound A (C_8H_8O) does not give iodoform test and on oxidation gave B. On hearting B with ammonia at higher temperature forms C. What are A and C?

A. 

B. 

C. 

D. 

Answer: D

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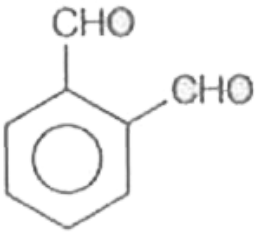
40. What is Y in the following reaction sequence

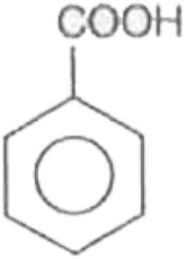
$$C_6H_5N_2Cl \xrightarrow{H_3PO_2 / H_2O} X \xrightarrow[Anhy.\,AlCl_3]{CO.HCl}$$

A.

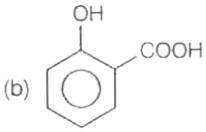
B.



C.



D.



Answer: A

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