



CHEMISTRY

BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

PRACTICE SET 06

Paper 1 Physics Chemistry

1. The osmotic pressure of 5% solution of urea at 273 K is

- A. 18.40 atm
- B. 18.61 atm
- C. 18.59 atm
- D. 18.86 atm

Answer: D



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2. In which one of the following cases, ΔH and ΔU are not equal to each other?

- A. The reaction involves no gaseous reactant product
- B. The number of moles of gaseous reactants and gaseous products is not equal to each other
- C. The number of moles of gaseous reactants and gaseous products is equal to each other
- D. The process is carried out in a closed vessel

Answer: B



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3. The number of atoms in 4.25 g of NH_3 is approximately

A. 6.023×10^{23}

B. $4 \times 6.023 \times 10^{23}$

C. 1.7×10^{24}

D. $4.25 \times 6.023 \times 10^{23}$

Answer: A



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4. In the presence of catalyst, the activation energy of the reaction is lowered by 2 kcal at $27^\circ C$. The rate of reaction will increased by

A. 2 times

B. 4 times

C. 28 times

D. 20 times

Answer: C

5. In the table given below, dimensions and angles of various crystals are given. Complete the table by filling the blanks.

Type of Crystal	Dimensions	Angles
1. Cubic	$a = b = c$	$\alpha = \beta = \gamma = \rho$
2. Tetragonal	\underline{q}	$\alpha = \beta = \gamma = 90^\circ$
3. Orthorhombic	$a \neq b \neq c$	r
4. Hexagonal	\underline{s}	$\alpha = \beta = 90^\circ, \gamma = t$

	p	q	r	s	t
(a)	90°	$a = b \neq c$	$\alpha = \beta = \gamma = 90^\circ$	$a = b \neq c$	120°
(b)	120°	$a = b = c$	$\alpha = 90^\circ$ $\beta = \gamma = 120^\circ$	$a \neq b \neq c$	90°
(c)	90°	$a \neq b = c$	$\alpha = \beta = \gamma = 120^\circ$	$a \neq b \neq c$	90°
(d)	120°	$a \neq b \neq c$	$\alpha \neq \beta \neq \gamma \neq 90^\circ$	$a \neq b = c$	120°

A.

$$p = 90^\circ, q = a = b \neq c, r = \alpha = \beta = \gamma = 90^\circ, s = a = b \neq c, t = 120^\circ$$

B.

$$p = 120^\circ, q = a = b = c, r = \alpha = 90^\circ, \beta = \gamma = 120^\circ, s = a \neq b \neq c, t = 90^\circ$$

C.

$$p - 90^\circ, q - a \neq b = c, r - \alpha = \beta = \gamma = 120^\circ, s - a \neq b \neq c, t -$$

D.

$$p - 120^\circ, q - a \neq b \neq c, r - \alpha \neq \beta \rightarrow \alpha \neq 90^\circ, s - a \neq b = c,$$

Answer: A



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6. An element (X) forms compounds of the formulae XCl_3 , X_2O_5 and Ca_3X_2 , but does not form XCl_5 . Which of the following is the element X ?

A. B

B. Al

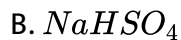
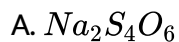
C. N

D. P

Answer: C

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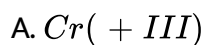
7. Aqueous solution of $Na_2S_2O_3$ on reaction with Cl_2 , gives



Answer: B

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8. Which of the following states is strong reducing agent?



B. $Cr(+VI)$

C. $Mo(+VI)$

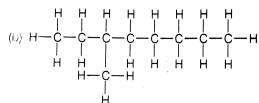
D. $Mo(+III)$

Answer: D

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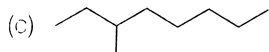
9.3 - methyloctance can be represented in which of the following forms ?

A. $CH_3CH_2CH(CH_2)_4CH_3$



B.

C.



D. All of the above

Answer: D

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10. 2-ethoxy propane can be obtained by heating ethyl bromide with

- A. sodium iso-propoxide
- B. sodium n-propoxide
- C. iso-propyl bromide
- D. n-propyl bromide

Answer: A



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11. Which is not affected by temperature?

- A. Normality
- B. Formality
- C. Molarity
- D. Molality

Answer: D

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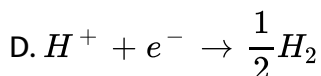
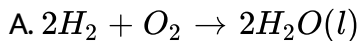
12. For the change C (diamond) $\rightarrow C$ (graphite) , $\Delta H = - 1.89$ KJ, if 6 g of diamond and 6g of graphite are seperately burnt to yield CO_2 the heat liberated in first case is :

- A. less than in the second case by 1.89 kj
- B. less than in the second case by 11.34 kj
- C. less than in the second case by 14.34 kj
- D. more than in the second case by 0.945 kj

Answer: A

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13. In $H_2 - O_2$ fuel cell, the reaction occurring at cathode is



Answer: C

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14. $2N_2O_5 \rightarrow 4NO_2 + O_2$. The rate of reaction in terms of N_2O_5 will be

A. $-\frac{d[N_2O_5]}{dt}$

B. $-\frac{1}{4} \frac{d[N_2O_5]}{dt}$

C. $-\frac{1}{2} \frac{d[N_2O_5]}{dt}$

D. $-\frac{1}{3} \frac{d[N_2O_5]}{dt}$

Answer: C

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15. Semiconductors are manufactured by addition of impurities of

- A. s-block elements
- B. actinoids
- C. lanthanoids
- D. p-block elements

Answer: D



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16. Select the correct statement.

- A. In the decomposition of an oxide into oxygen and gaseous metal, entropy increased
- B. Decomposition of an oxide is an endothermic change

C. To make ΔG° negative, temperature should be high enough so

that $T\Delta S^\circ > \Delta H^\circ$

D. All are correct statement

Answer: D

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17. Which of the following is incorrect match for hybridisation and geometry?

A. Hybridisation- dsp^2 , Geometry-Planar

B. Hybridisation- d^3s and sp^3 , Geometry-Tetrahedral

C. Hybridisation- d^2sp^3 and sp^3d^2 , Geometry-Octahedral

D. Hybridisation- d^3s , Geometry-Planar

Answer: D

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18. The first ionisation enthalpies of the lanthanoids are around (A)_____, the second about (B)_____ comparable with those of (C)_____ here, A,B and C refers to

- A. A-600 kJ/mol, B-1200kJ/mol,C-calcium
- B. A-1200 kJ/mol, B-600kJ/mol, C-strontium
- C. A-1200 kJ/mol, B-600 kJ/mol, C-lanthanum
- D. A-600 kJ/mol, B-1200kJ/mol, C-lutetium

Answer: A

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19. The number of primary, secondary and tertiary carbons in 3,4-dimethylheptane are

- A. 4,3 and 2

B. 2,3 and 4

C. 4,2 and 3

D. 3,4 and 2

Answer: A



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20. Aliphatic aldehyde can be oxidised by

A. Tollen's reagent

B. Fehling's solution

C. Benedict's solution

D. All of these

Answer: D



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21. Equation of state is

A. $M \times V = wpRT$

B. $\frac{MT}{R} = \frac{wV}{p}$

C. $\frac{wR}{p} = \frac{VM}{T}$

D. None of these

Answer: C



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22. The heat of combustion of solid benzoic acid at constant volume is

-321.30 kJ at 27°C . The heat of combustion at constant pressure is

A. $-321.30 - 300R$

B. $-321.30 + 300R$

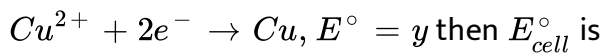
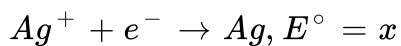
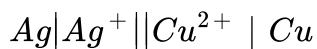
C. $-321.30 - 150R$

D. $-321.30 + 900R$

Answer: C

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23. For a cell given below



A. $x+2y$

B. $2x+y$

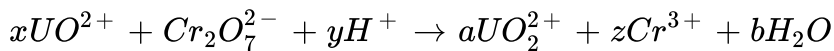
C. $y-x$

D. $y-2x$

Answer: C

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24. In the following redox reaction,



the value of coefficients x,y and z respectively, are

A. 3,8,2

B. 3,8,7

C. 3,2,4

D. 3,1,8

Answer: A



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25. Iron is obtained on large scale from haematite Fe_2O_3

A. by reduction

B. by oxidation

C. by reduction followed by oxidation

D. by oxidation followed by reduction

Answer: A

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26. The element(s) of group-16 which exhibit(s) allotropy is/are

A. O

B. S

C. Te

D. All of these

Answer: D

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27. Pick out incorrect statements about noble gases.

- A. Ar is used in metallurgical processes
- B. he is used in cryscopy to obtain the very low temperature required for superconductivity and lasers
- C. he is used in weather balloons and airships
- D. He cannot be used in preference to nitrogen (N_2) to dilute the oxygen in the gas cylinders used by divers

Answer: D



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28. The atomic number of 5f series range from

- A. 80 to 103
- B. 90 to 103
- C. 58 to 72
- D. 57 to 71

Answer: B

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29. The chloro compound which is used as a fire extinguisher is



Answer: B

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30. Aldol condensation between following compounds, followed by dehydration gives emthyl vinkyl ketone:

A. HCHO and CH_3COCH_3

B. HCHO and CH_3CHO

C. Two molecular of CH_3CHO

D. Two molecular of CH_3COCH_3

Answer: A

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31. The compound with the highest boiling point is:

A. n-hexane

B. n-pentane

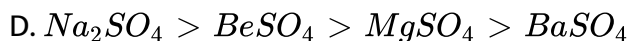
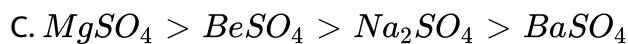
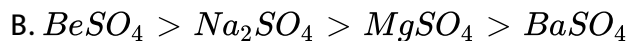
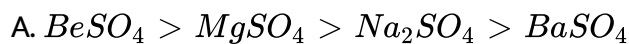
C. 2,2-dimethylpropane

D. 2-methylbutane

Answer: A

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32. The solubility of Na_2SO_4 , $BeSO_4$, $MgSO_4$ and $BaSO_4$ will follow the order



Answer: D



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33. Match list I with List II and select the correct answer using the codes given below the lists.

List I (Pair of isomers)	List II (Type of isomerism)
A. (I) $[\text{Co}(\text{NH}_3)_6]\text{Cr}(\text{CN})_6$ (II) $[\text{Co}(\text{NH}_3)_6]\text{CO}(\text{CN})_6$	1. Ionisation
B. (III) $[\text{PtCl}_2(\text{NH}_3)_4]\text{Br}_2$ (IV) $[\text{PtBr}_2(\text{NH}_3)_4]\text{Cl}_2$	2. Hydrate
C. (V) $[\text{Co}(\text{SCN})(\text{NH}_3)_5]\text{Cl}_2$ (VI) $\text{Co}(\text{NCS})(\text{NH}_3)_5\text{Cl}_2$	3. Coordination
D. (VII) $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ (VIII) $[\text{CrCl}_2(\text{H}_2\text{O}_4)\text{Cl} \cdot 2\text{H}_2\text{O}]$	4. Geometrical
	5. Linkage isomerism

A. A-4,B-1,C-5,D-2

B. A-1,B-3,C-2,D-5

C. A-3,B-1,C-5,D-2

D. A-1,B-3,C-5,D-2

Answer: C

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34. Which one of the alkali metals forms only the normal oxide, M_2O , on heating in air ?

A. Rb

B. K

C. Li

D. Na

Answer: D

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35. Two moles of acetic acid are heated with P_2O_5 . The product formed is

A. 2 moles of ethyl alcohol

B. formic anhydride

C. acetic anhydride

D. 2 moles of methyl cyanide

Answer: C

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36. Solubility of ethylamine in water is due to

- A. low molecular weight
- B. ethyl group is present in ethyl alcohol
- C. formation of H-bonding with water
- D. being a derivative of ammonia

Answer: C



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37. which of the following is produced by reducing RCN in sodium and alcohol?

- A. $RCONH_2$
- B. $RCOONH_4$
- C. RCH_2NH_2

D. $(RCH_2)_3N$

Answer: C



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38. Osteomalacia in adults are produced by the deficiency of vitamin

A. B_6

B. H

C. D

D. E

Answer: C



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39. PHBV stands for

- A. Poly β -hydroxybutyrate valerate
- B. poly hydroxy butyrate-co- β -hydroxy valerate
- C. Poly β -hydroxy butyrate-co- β -hydroxy valerate
- D. Poly α -hydroxy butyrate-co- β -hydroxy valerate

Answer: C

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40. Arrange the following free radicals in the order of decreasing stability: methyl (*I*), vinyl (*II*), allyl (*III*), benzyl (*IV*)

- A. IgtIIgtIIIgtIV
- B. IIIgtIIgtIgtIV
- C. IgtIgtIVgtIII
- D. IVgtIIIgtIgtII

Answer: D

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41. Which of the following is the strongest oxidant?



Answer: A

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42. $A^- + H_2O \rightleftharpoons HA + OH^-$ represents the hydrolysis reaction. This indicates that the salt is made up of

A. strong acid and weak base

B. strong base and weak acid

C. weak acid and weak base

D. strong acid and strong base

Answer: B

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43. Crystal field stabilization energy for high spin d^4 octahedral complex is

A. $-1.8\Delta_0$

B. $-1.6\Delta_0 + P$

C. $-1.2\Delta_0$

D. $-0.6\Delta_0$

Answer: D

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44. Phenol is used as a starting material for the manufacture of a drug known as

- A. phenyl
- B. bakelite
- C. aspirin
- D. dettol

Answer: C



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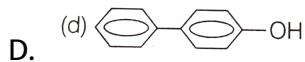
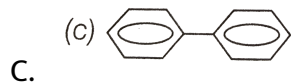
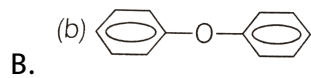
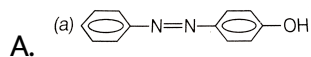
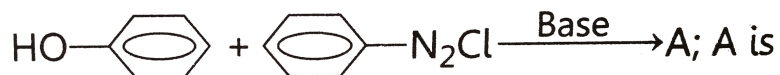
45. Which of the following is strongest acid?

- A. $CH_3 \cdot CH_2COOH$
- B. CH_3COOH
- C. $CH_3 \cdot CHClCOOH$
- D. $CH_3 \cdot CH_2 \cdot CH_2COOH$

Answer: C

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46. In the reaction



Answer: A

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47. Carbohydrates are detected by

A. Molisch test

B. carbylamine test

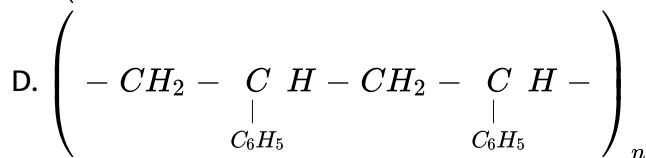
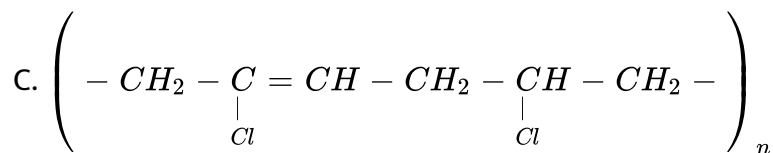
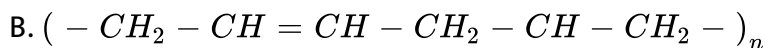
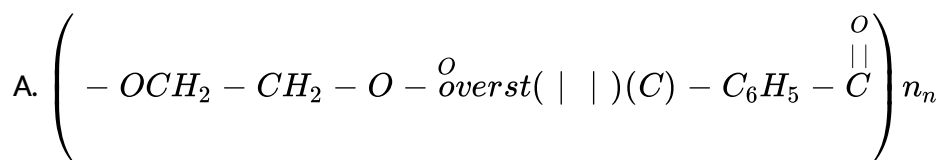
C. Baeyer's test

D. haloform test

Answer: A

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48. Which of the following represent terylene (or dacron)?



Answer: A

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49. The most commonly used agent (s) for hyperacidity is

- A. magnesium carbonate
- B. magnesium hydroxide
- C. aluminium phosphate
- D. all of these

Answer: D

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50. Which type of graph gives straight line in Langmuir adsorption isotherm?

A. $\frac{x}{m} \rightarrow \frac{1}{p}$

B. $\frac{m}{x} \rightarrow \frac{1}{p}$

C. $\log_{10} \frac{x}{m} \rightarrow \frac{1}{p}$

D. $\log_{10} \frac{x}{m} \rightarrow p$

Answer: B



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