



## CHEMISTRY

### BOOKS - SAI CHEMISTRY (TELUGU ENGLISH)

### QUESTION PAPER

#### Chemistry

1. Which of the following series correctly represents the energy of the radiation ?

A. Radiu waves > X-rays > visible > IR

B. UV > X-rays > IR rdio waves

C.  $\gamma$  – rays > IR > Visible > micro waves

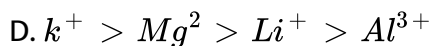
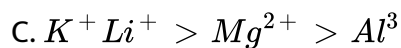
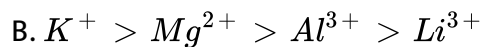
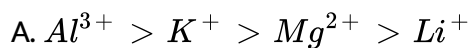
D. X-rays > UV > *IR* > micro wave

**Answer: D**



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2. Identify the correct order of ionic radii of the following ions

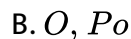
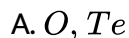


Answer: C



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3. The elements with highest and lowest electron gain enthalpy in group 16 respectively are



C.  $S, O$

D.  $S, Te$

**Answer: C**

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4. Which is the correct order of dipole moments of  $BF_3$ ,  $NF_3$  and  $NH_3$ ?

A.  $NH_3 > BF_3 > NF_3$

B.  $BF_3 > NF_3 > NH_3$

C.  $NH_3 > NF_3 > BF_3$

D.  $NF_3 > NH_3 > BF_3$

**Answer: C**

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5. The van der Waals equation for 0.5 mol of a gas is

A.  $\left(P + \frac{a}{4V^2}\right)\left(\frac{V - b}{2}\right) = RT$

B.  $\left(P + \frac{a}{4V^2}\right)(2V - b) = RT$

C.  $\left(P + \frac{a}{4V^2}\right)(2V - 4b) = RT$

D.  $\left(P + \frac{a}{4V^2}\right) = \frac{2RT}{2(V - R)}$

**Answer: B**



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6. The approximate molarity of a solution in  $\text{mol L}^{-1}$  that contains 13.50 g of NaCl dissolved in 452 mL of water is

A. 0.25

B. 0.51

C. 1.0

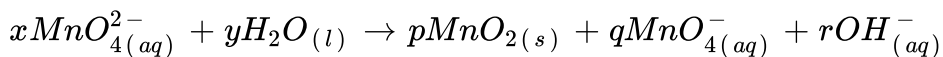
D. 1.2

**Answer: B**



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7. The coefficients X,y,p,q and r in the following balanced equations respectively are :



A. 3, 2, 2, 4, 1

B. 2, 3, 1, 1, 5

C. 2, 3, 2, 1, 5

D. 3, 2, 1, 2, 4

**Answer: D**



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8. The increase in entropy in  $JK^{-1}$  of a substance when it absorbs 1 kJ of heat energy at 3 K is

A. 3.33

B. 333.3

C. 0.333

D. 0.0333

**Answer: B**



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9. Consider the equilibrium  $H_2 + I_2 \rightleftharpoons 2HI$ . Calculate the equilibrium constant of the reverse reaction when the equilibrium concentration of  $H_2$ ,  $I_2$  and  $HI$  are  $1.14 \times 10^{-2}$ ,  $0.12 \times 10^{-2}$  and  $2.50 \times 10^{-2} molL^{-1}$ , respectively

A. 46.4

B. 0.021

C. 18.42

D. 0.054

**Answer: B**



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**10.** The concentration in M of OH in  $0.0014M H_2SO_4$  is

A.  $1 \times 10^{-13}$

B.  $0.5 \times 10^{-12}$

C.  $5 \times 10^{-12}$

D.  $0.5 \times 10^{-13}$

**Answer: C**



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11. Which one of the following gives highest volume of  $O_2$  at STP on complete decomposition ?

- A. 2 mL of 100 vol.  $H_2O_2$
- B. 500 mL of 30 vol.  $H_2O_2$
- C. 1 L of 10 vol.  $H_2O_2$
- D. 100 mL of 20 vol.  $H_2O_2$

**Answer: B**



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12. The frequency of the radiation emitted by alkali metals in the flame test follows the other

- A.  $Li > Na > K > Cs$
- B.  $Li > K > Na > Cs$
- C.  $K > Na > Li > Cs$



D.  $K > Cs > Na > Li$

**Answer: D**



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13. Which one of the following is correct relating to diborane ( $B_2H_6$ ) ?

A. Colourless liquid

B. Colourless solid

C. Colourless gas

D. Colourless gel

**Answer: C**



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14. Identify the correct statement (s) from the following:

- (i) The catentiaon property of group 14 elements decreases from carbon to tin.
- (ii) Fullerence ( $C_{60}$ ) has 20 five-membered carbon rings and 12 six-membered carbon rings.
- (iii)  $SiO_2$  is soluble in Conc.NaOH.

A. Only iii

B. I, *iii*

C. I, *ii*

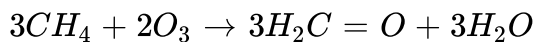
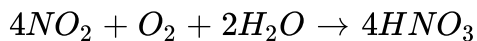
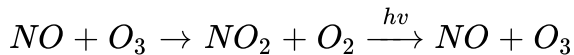
D. *ii, iii*

**Answer: B**



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15. Consider the following reactins involving some atmospheric pollutants.



Based on the above, the formation of formaldehyde from methane in the atmosphere will be controlled by,

- A. Only  $O_3$
- B.  $O_3$  and  $NO_2$
- C.  $O_3$ ,  $NO$  and  $NO_2$
- D.  $NO$  and  $NO_2$

**Answer: C**



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16. The number of no bond resonance structures possible for but-1-ene and a  $3^\circ$  carbocation having methyl, ethyl and isobutyl groups on cationic carbon respectively are

A. 3, 7

B. 4, 6

C. 2, 7

D. 5, 6

**Answer: C**



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17. Total number of acyclic and cyclic isomers possible for molecular formula  $C_4H_6$  is

A. 5

B. 7

C. 9

D. 8

**Answer: C**

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18. In a compound AB, A atoms occupy the corners of the cube and the cube and the B atoms occupy the body centre of the cube. If the A atoms possess magnetic moment due to up-spin and B atoms possess magnetic moment due to down spin, the magnetic nature of the compound AB in an isolated unit cell is

- A. Paramagnetic
- B. Ferrimagnetic
- C. Diamagnetic
- D. Anti-ferromagnetic

**Answer: D**

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19. Two compounds form an ideal solution at room temperature. Which of the following are correct for this ideal solution ?

(a)  $\Delta G = +ve$

(b)  $\Delta S = +ve$  surrounding

(c)  $\Delta S = +ve$  system

(d)  $\Delta_{mix}H = 0$

A. c,d

B. b,c,d

C. b,c

D. a,d

**Answer: A**



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20. If a solute associates in a solvent, its experimentally calculated molar mass using boiling point elevation method will be

- A. Half of the actual value
- B. Will remain same as actual value
- C. One fourth of the actual value
- D. Higher than the actual value

**Answer: D**

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21. For a half cell containing a Pt rod immersed in a solution of  $1MHA$ ,  $O_2(g)$  is bubbled at 1 atm. The standard reduction potential for water formation is 1.23 V. Given a dissociation constant,  $K_a = 1 \times 10^{-4}$  for HA, what is  $E_{\text{half cell}}$  at  $298K$  in V?

- A. 1.289
- B. 1.717
- C. 1.348
- D. 1.112

**Answer: D**

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**22.** When the temperature of a reaction is raised by  $10^{\circ}C$  how many times the rate will be enhanced ?

A. 1.5

B. 3

C. 2

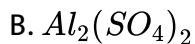
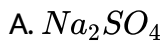
D. 4

**Answer: C**

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**23.** When the temperature of a reaction is raised by  $10^{\circ}C$  for  $Sb_2S_3$  sol is





**Answer: B**



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24. In electrolytic refining of copper, pure Cu is used as anode.

(B) Zone refining is based on the principle that impurities are more soluble in the melt than in the solid states of the metal. (D) Very pure Zr may be obtained by Galvanisation.

(E) In copper smelting hot air is used to convert  $Cu_2S$  to  $CuSO_4$ .

A. A,B,E

B. B,C

C. B,C,D,E

D. B,C,D

**Answer: B**

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25. Identify all the products formed when  $XeF_4$  is completely hydrolysed

A.  $Xe, XeO_3, O_2, HF$

B.  $Xe, O_2, HF$

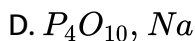
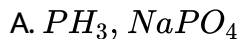
C.  $XeO_3, O_2$

D.  $XeO_3$

**Answer: A**

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26. What are the compounds formed when white Phosphorous is dissolved in boiling NaOH solution in an inert atmosphere ?

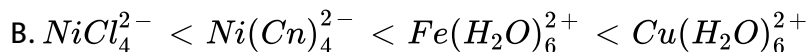
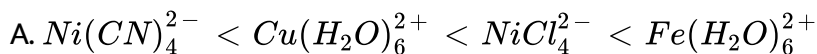
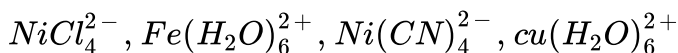


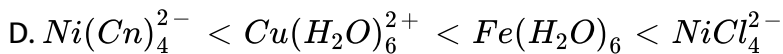
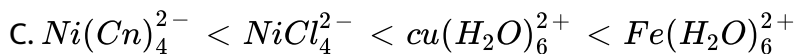
Answer: C



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27. The correct order of the increasing magnetic moments for the following ions is





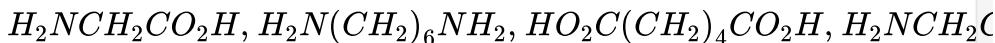
**Answer: A**



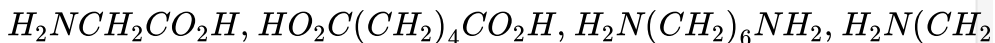
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**28.** The monomer units of Nylon 6,6 Nylon 2-Nylon 6 are respectively,

A.



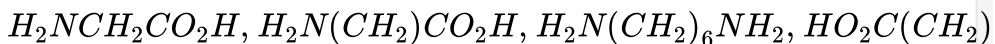
B.



C.



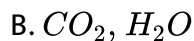
D.



**Answer: C**

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**29.** The product (s) formed when glucose reacts with a strong oxidising agent like  $HNO_3$  is/are



**Answer: A**

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**30.** Which of the following statements are true for saccharin.

(A) It is a sodium salt and is not soluble in water.

(B) It is much sweeter than cane suger.

(C) It is great value for diabetic patients and is excreted as such in urine.

(D) It is harmful

A. A,B

B. B,C

C. C,D

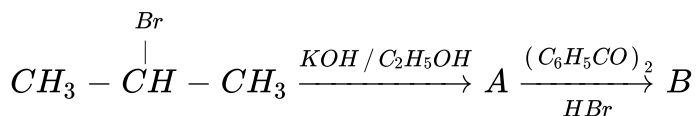
D. B,D

**Answer: B**



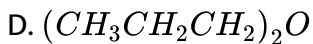
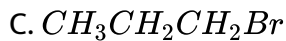
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**31.** The final product "B" of the below reaction sequence is



A.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

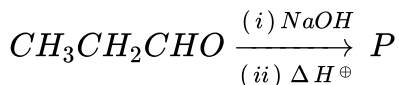
B.  $\text{CH}_3\text{CH} = \text{CH}_2$



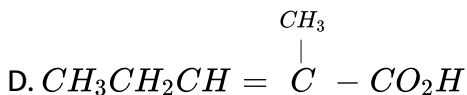
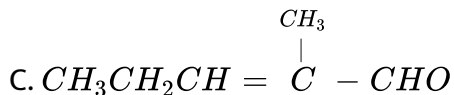
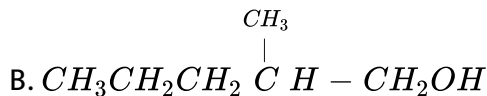
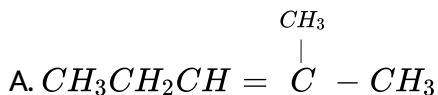
Answer: C

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32. The product (P) of below reaction sequence is



(iii)  $H_2 / Ni, 573K$



Answer: B



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