



# CHEMISTRY

## BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

### PRACTICE SET 09

#### Paper 1 Physics Chemistry

1. In cold countries, ethylene glycol is added to water in the radiators of cars during winters. It

results in:

A. reducing the viscosity

B. lowering in freezing point

C. making water a better conductor of  
electricity

D. reducing the specific heat

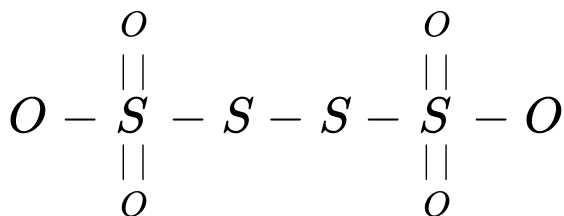
**Answer: B**



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2. The oxidation states of S atom in  $S_4O_6^{2-}$

from left to right respectively are



A. +6, 0, 0, +6

B. +3, 1, +1, +3

C. +5, 0, 0, +5

D. +4, +1, +1, +4

**Answer: C**



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3. The hydrogen/oxygen fuel cell keeps on working so long as

A. the concentration of electrolyte in reduction half-cell reduces to zero

B. the concentration of electrolyte in oxidation half-cell reduces to zero

C. the concentration of electrolyte in reduction half-cell is equal to the

concentration of electrolyte in oxidation

half-cell

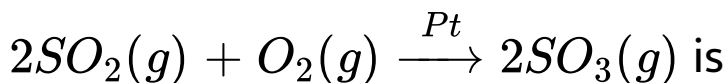
D. The supply of reactants continues

**Answer: D**



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4. Rate equation for the reaction between



$r = k[SO_2][SO_3]^{-1/2}$ . On increasing the

conc. of  $SO_3$ , the rate of the reaction, would

A. increases

B. decreases

C. become twice

D. not affected

**Answer: B**



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5. In  $CaF_2$  type (fluorite structure)  $Ca^{2+}$  ions form W structure and  $F^-$  ions are present in

all X voids. The coordination number of  $Ca^{2+}$  is Y and  $F^-$  is Z. W,X,Y and Z respectively are

- A. W-ccp,X-octahedral,Y-8,Z-4
- B. W-bcc,X-tetrahedral,Y-4,Z-8
- C. W-ccp,X-tetrahedral,Y-8,Z-4
- D. W-ccp,X-octahedral,Y-4,Z-8

**Answer: C**



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6. Hydrogen sulphide is acidic while water is neutral. The reason is

A. molecular weight of  $H_2S$  is more than

$H_2O$  water molecules associate, while

$H_2S$  molecules does not

B. water molecules associate, while  $H_2S$

molecules does not

C. H-S bond is weaker than  $H - O$  bond

due to the bigger size of S-atom



D. S-atoms has less affinity for hydrogen atom than O-atom has for it

**Answer: C**



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7. What may be expected to happen when phosphine gas is mixed with chlorine gas ?

A.  $PCl_3$  and HCl are formed and the mixture warms up

B.  $PCl_3$  and HCl are formed and the mixture cools down

C.  $PH_3Cl_2$  is formed with warming up.

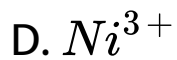
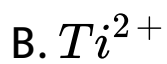
D. The mixture only cools down

**Answer: B**



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8. Which of the following ions will not show paramagnetism?

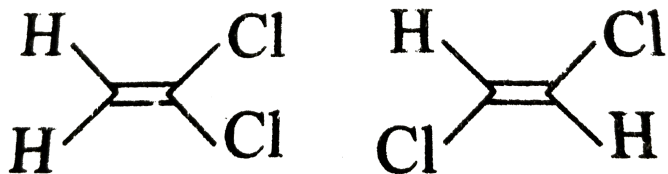


**Answer: C**



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9. The following compounds differ in :



A. configuration

B. conformation

C. structure

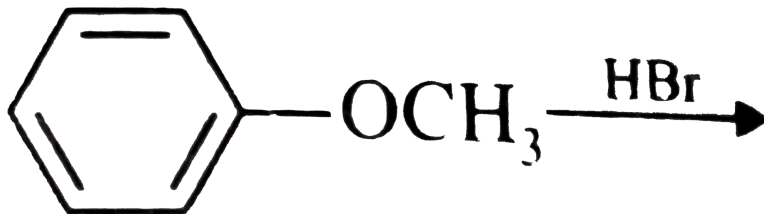
D. chirality

**Answer: C**



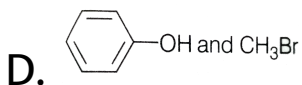
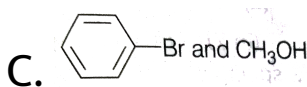
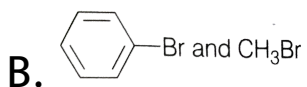
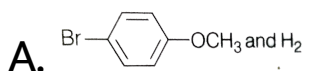
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10. In the reaction



the

products are



**Answer: D**



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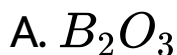
11. van't Hoff factor more than unity indicates that the solute in solution has

- A. dissociated
- B. associated
- C. both (a) and (b)
- D. cannot say anything

**Answer: A**



12. Which of the following oxides is not expected to react with sodium hydroxide ?



**Answer: B**



13. Wrong about molar conductivity is

A. the solution contains Avogadro's number of molecules of the electrolyte

B. it is the product of specific conductivity and volume of solution in cc containing 1 mole of the electrolyte

C. its units are  $\text{ohm}^{-1}\text{cm}^2\text{mol}^{-1}$

D. its value for 1 M NaCl solution is same as that of 1 M glucose solution



**Answer: D**



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**14.** The activation energy for the forward reaction  $X \rightarrow Y$  is  $60 \text{ kJ mol}^{-1}$  and  $\Delta H$  is  $-20 \text{ kJ mol}^{-1}$ . The activation energy for the reverse reaction is

A. 40 kJ/mol

B. 60 kJ/mol

C. 80 kJ/mol

D. 20 kJ/mol

**Answer: C**



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**15.** Which among the following will show anisotropy ?

A. Glass

B. Plastic

C. Barium chloride

D. Wood

**Answer: C**



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**16.** According to the adsorption theory of catalysis, the speed of the reaction increases because

A. adsorption produces heat which increases the speed of the reaction

B. adsorption lowers the activation of the reaction

C. the concentration of reactant molecules at the active centres of the catalyst becomes high due to adsorption

D. in the process of adsorption, the activation energy of the molecules large

**Answer: B**



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17. Among the members of VA group (N,P,As,Sb and Bi) which of the following properties shows an increase as we go down from nitrogen to bismuth.

A. Stability of +5 oxidation state

B. Reducing character of hydrides

C. Electronegativity

D. Acidic nature of the pentoxide

**Answer: B**



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18. Highest density will be of this element

A. mercury

B. gold

C. osmium

D. lead

**Answer: C**



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19. The electron affinity values (in  $\text{kJmol}^{-1}$ ) of three halogens, X, Y and Z are respectively -349, -333 and -325. Then X, Y and Z are respectively

A.  $F_2$ ,  $Cl_2$  and  $Br_2$

B.  $Cl_2$ ,  $F_2$  and  $Br_2$

C.  $Cl_2$ ,  $Br_2$  and  $F_2$

D.  $Br_2$ ,  $Cl_2$  and  $F_2$

**Answer: B**



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20. A suitable reagent for the distinction of aldehyde and ketone is

A.  $NH_2OH$

B.  $NH_2NH_2$

C. DNP

D. ammoniacal  $AgNO_3$

**Answer: D**



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21. Significance of Henry's law constant ( $K_H$ )

is

A. higher the value of  $K_H$ , lower the solubility of gas in liquid

B. higher the value of  $K_H$ , higher the solubility of gas in liquid

C. lower the value of  $K_H$ , lower the solubility of gas in liquid

D. all of the above

**Answer: A**



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22. When  $1\text{ mol}$  of a monoatomic ideal gas at  $TK$  undergoes adiabatic change under a constant external pressure of  $1\text{ atm}$ , changes volume from  $1L \rightarrow 2L$ . The final temperature (in K) would be

A.  $\frac{T}{2^{2/3}}$

B.  $T + \frac{2}{3 \times 0.0821}$

C.  $T$

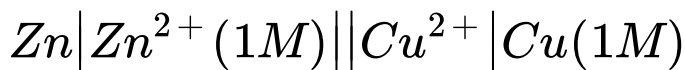
D.  $T - \frac{2}{3 \times 0.0821}$

**Answer: A**



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**23.** The emf of the cell



is 1.1V. If the standard reduction potential of

$\text{Zn}^{2+} | \text{Zn}$  is -0.78V, what is the oxidation

potential of  $\text{Cu} | \text{Cu}^{2+}$  ?

A.  $+1.86V$

B.  $0.32V$

C.  $-0.32V$

D.  $-1.86V$

**Answer: C**



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**24.** The volume of 2N  $H_2SO_4$  solution is  $0.1dm^3$ . The volume of its decinormal solution (in  $dm^3$ ) will be

A. 0.1

B. 0.2

C. 2

D. 1.7

**Answer: C**



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**25.** The geometry of electron pairs around I in

$IF_5$  is

- A. octahedral
- B. trigonal bipyramidal
- C. square pyramidal
- D. pentagonal planar

**Answer: C**



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**26.**  $H_2O$  is liquid while  $H_2S$  is a gas at room temperature. Explain.

- A. electronegativity of O is greater than S
- B. difference in the bond angles at both molecules
- C. association takes place in  $H_2O$  due to H-bonding while no H-bonding in  $H_2S$
- D. O and S belong to different periods.

**Answer: C**



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27. Pick out the incorrect statement for  $XeF_4$ .

A.  $XeF_4$  disproportionate violently with water

B. It is used as fluorinating agent

C. It has octahedral structure (or geometry)

D. It oxidises  $I^-$  to  $I_2$

**Answer: C**



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**28.** Misch metal is an alloy of

A. lathanide, iron and carbon

B. lathanide and copper

C. calcium and copper

D. calcium and nickel

**Answer: A**



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29. Carbon tetrachloride on hydrolysis with ethanolic KOH solution yields

- A. potassium formate
- B. potassium acetate
- C. potassium carbonate
- D. None of these

**Answer: C**



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30. Cyclic trimer can be obtained as a polymerisation product by the carbonyl compounds

A. HCHO

B.  $CH_3CHO$

C. both (a) and (b)

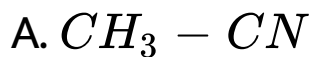
D. None of these

**Answer: C**



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31. Which N-atom of cyanide species is more basic?



B. t-butyl cyanide

C. Ethyl cyanide



**Answer: B**



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32. In  $SiF_6^{2-}$  and  $SiCl_6^{2-}$ . which one exist?

A.  $SiF_6^{2-}$  because of small size of F

B.  $SiF_6^{2-}$  because of large size of F

C.  $SiCl_6^{2-}$  because of small size of Cl

D.  $SiCl_6^{2-}$  because of large size of Cl

**Answer: A**



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**33.** In the temperature changes from  $27^{\circ} C$  to  $127^{\circ} C$ , the relative percentage change in RMS velocity is

A. 1.56

B. 2.56

C. 15.6

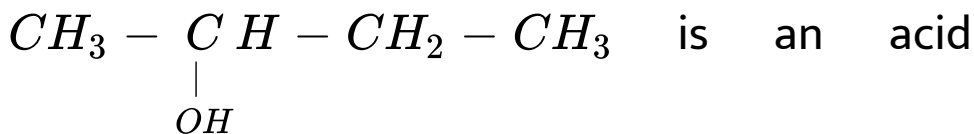
D. 82.4

**Answer: C**



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34. Dehydration of



catalysed elimination reaction, this obeys

- A. Saytzeff rule
- B. Markownikoff's rule
- C. Gibson rule
- D. Hofmann rule

**Answer: A**



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**35.** Manufacture of acetic acid by fermentation process is called

- A. wood distillation method
- B. pyroligneous acid method
- C. quick vinegar method
- D. none of the above

**Answer: C**



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36. The basicity of aniline is less than that of cyclohexylamine. This is due to :

A. +  $R$  - effect of  $-NH_2$  group

B. -  $I$  - effect of  $-NH_2$  group

C. -  $R$  - effect of  $-NH_2$  group

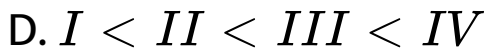
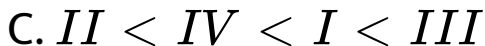
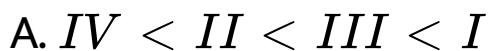
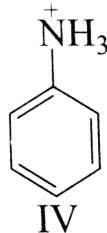
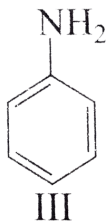
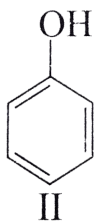
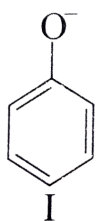
D. hyperconjugation effect

**Answer: A**



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37. Coupling of diazonium salts of following takes place in the order



**Answer: A**



38. Proteins give white precipitate with Millon's reagent, which is -

A. mercurous and mercuric nitrate in



B. mercurous and mercuric chloride in HCl

C. mercurous and mercuric chloride in



D. None of the above

**Answer: A**



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**39.** For the purification of organic compounds, the latest technique followed is

- A. chromatography
- B. steam distillation
- C. fractional crystallisation
- D. sublimation

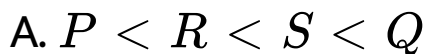
**Answer: A**

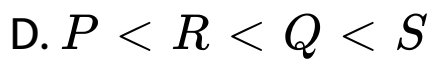


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**40.** the ascending order of stability of the carbanion

$CH_3(P)$ ,  $C_6H_5\bar{C}H_2(Q)$ ,  $(CH_3)_2\bar{C}H(R)$  and  $H_2\bar{C} - CH = CH_2(S)$  is



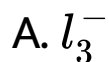


**Answer: B**



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**41.** Which of the following is a pseudohalide?



**Answer: D**



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42.  $pK_h$  would be minimum for the salt

A.  $KCl$

B.  $NH_4NO_3$

C.  $NH_4CN$

D.  $NaCN$

**Answer: C**



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**43.** Among the following, the compound that can be most readily sulphonated is:

A. benzene

B. chlorobenzene

C. toluene

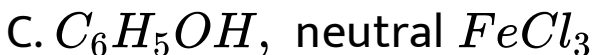
D. nitrobenzene

**Answer: C**





44. Among the following sets of reactants which one produces anisole?



**Answer: B**



45. How many geometrical isomers of the compound  $[Pt(NH_3)(Br)(Cl)(Py)]$  will show optical isomerism?

A. 0

B. 1

C. 2

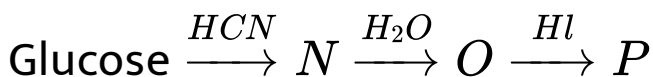
D. 3

**Answer: A**



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46. The product P formed in the following reaction sequence is



- A. heptanoic acid
- B.  $\alpha$ -methyl caproic acid
- C. hexanoic acid
- D. None of these

**Answer: A**



47.  $CH_3COOH + PCl_5 \rightarrow 'P'$ , choose the correct option from the following

- A. P gives acetic acid upon hydrolysis
- B. P gives acetamide upon hydrolysis
- C. P is unreactive towards nucleophilic substitution reaction
- D. none of the above

**Answer: A**



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**48.** The plastic household crockery is prepared by using

- A. melamine and tetrafluoroethane
- B. malonic acid and hexamethylenamine
- C. melamine and vinyl acetate
- D. melamine and formaldehyde

**Answer: D**



**49.** Sodium benzoate is a commonly used food preservative. It is

A. decomposed by gastric juice

B. decomposed to  $CO_2$  by the heat of digestion process

C. deposited in the bones after metabolism

D. converted to hippuric acid and is excreted in the urine after metabolism

**Answer: D**



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50. By wurtz reaction a mixture of methyl iodide and ethyl iodide gives

A. butane

B. ethane

C. propane

D. a mixture of the above three

**Answer: A**



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