



## CHEMISTRY

# BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

## PRACTICE SET 02

### Paper 1 Chemistry

1. The density at  $20^{\circ}C$  of a 0.5 solution of acetic acid in water is  $1.0042 \text{ g/m L}$ . The molality of the solution

A.  $0.50m$

B.  $0.613m$

C.  $0.513m$

D.  $0.48m$

**Answer: C**

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2. If the heat of dissolution of anhydrous  $CuSO_4$  and  $CuSO_4 \cdot 5H_2O$  is  $-15.89kcal$  and  $2.80kcal$ , respectively, then the heat of hydration of  $CuSO_4$  to form  $CuSO_4 \cdot 5H_2O$  is

A.  $-13.09 kcal$

B.  $-18.69 kcal$

C.  $+13.09kcal$

D.  $+18.69 kcal$

**Answer: B**



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**3. Faraday's laws of electrolysis are related to the**

- A. atomic number of the cation
- B. atomic number of the anion
- C. equivalent weight of the electrolyte
- D. speed of the cation

**Answer: C**



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4. For a first order reaction, the half-life period is independent of

- A. initial concentration
- B. cube root of initial concentration
- C. first power of final concentration
- D. square root of final concentration

**Answer: A**

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5. Which one of the following statement is correct ?

- A. Schottky defect lowers the density

B. Frenkel defect increases the dielectric constant of the crystals

C. Stoichiometric defects make the crystals good electrical conductors

D. All of the above

**Answer: D**



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6. When ammonia is heated with cupric oxide, a molecule of ammonia will

A. gain 3 electrons

B. lose 3 electrons

C. gain 2 electrons

D. lose 2 electrons

**Answer: B**

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7. The weight of 112 m L of oxygen at NTP is

A.  $0.64g$

B.  $0.96g$

C.  $0.32g$

D.  $0.16g$

**Answer: D**

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## 8. Transition elements

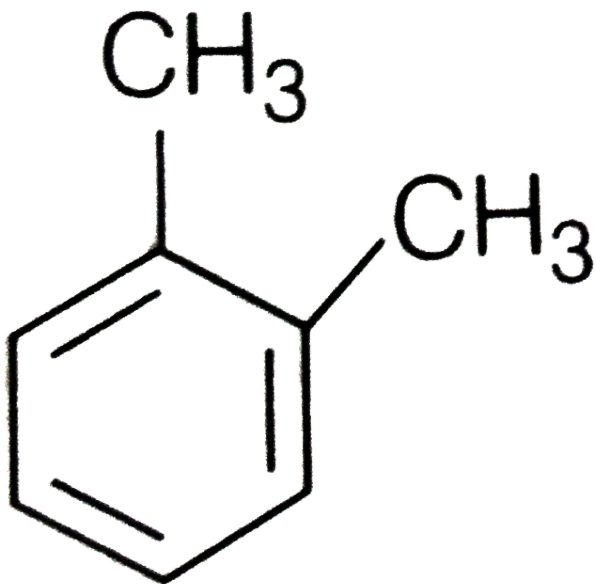
- A. exhibit inert pair effect
- B. exhibit variable oxidation state
- C. have low melting point
- D. do not show catalytic properties

**Answer: B**



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9. The common name and IUPAC name of the given figure



- A. o-xylene and toluene
- B. o-xylene and 1,2-dimethylbenzene
- C. o-xylene and 1,2- dimethyltoluene
- D. p-xylene and 1,2-dimethylbenzene

**Answer: B**



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10. Which of the following is not the characteristic of a covalent compound ?

- A. No definite geometry
- B. Insoluble in polar solvent
- C. Small difference in electronegativity between the combining atoms
- D. Low melting point

**Answer: A**

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11. The vapour pressure of a solution ( $P$ ) and the vapour pressure of the solvent ( $P^\circ$ ) are related to each others as ( $x_1$  is the mole fraction of solvent)

A.  $p = p^\circ X_2$

B.  $p = p^\circ X_1$

C.  $p^\circ = p. X_1$

D.  $p^\circ = p. X_2.$

**Answer: B**



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12. 28g of  $N_2$  gas at 300 K and 20 atm was allowed to expand isothermally against a constant external pressure of 1 atm , q

for the gas is ( $R = 0.082$ ).

A. 2495 J

B. 7473 J

C. 2367 J

D. 2570 J

**Answer: C**



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**13.** Hydrogen gas is not liberated when the following metal is added to dil.  $HCl$ :

A. Ag

B. Zn

C. Mg

D. Sn

**Answer: A**



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**14.** The rate of certain hypothetical reaction

$A + B + C \rightarrow$  Products, is given by

$$r = - \frac{dA}{dt} = k[A]^{1/2}[B]^{1/3}[C]^{1/4}$$

The order of a reaction is given by

A.  $1/2$

B.  $13/12$

C. 1

D. 2

**Answer: B**



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**15.** Which arrangement of electrons describe ferrimagnetism ?



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**16.** In case of electrolytic refining of the metal , the false statement(s)is/are

A. the electrolyte is some soluble salt of the metal

B. the rod of impure is made cathode

C. carbon is used as a reducing agent

D. Both (b) and (c)

**Answer: D**



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**17.** The number of steps, in which orthophosphoric acid is ionised, are

A. 3

B. 1

C. 4

D. 2

**Answer: A**



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**18. Cerium shows oxidation state of +4 because**

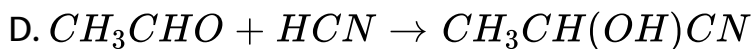
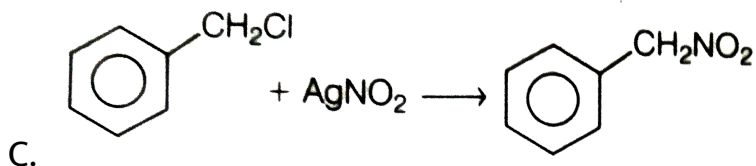
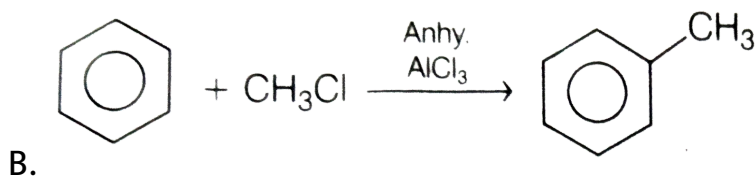
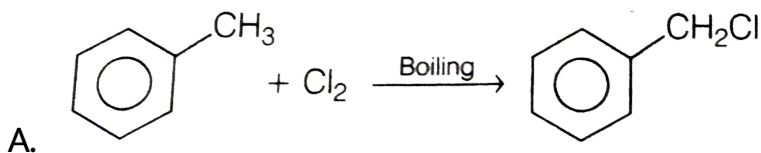
- A. it resembles alkali metals
- B. it has very low IE
- C. it has tendency to attain noble gas configuration
- D. it has tendency to attain  $f^0$  - configuration

**Answer: D**



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19. Which of the following is a free radical substitution reaction?



Answer: A

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20. Which one of the following reactions cannot be used for the reduction of



- A. Clemmensen reaction
- B. Wolf-Kishner reaction
- C. Wurtz reaction
- D. HI and red phosphorous at  $200^{\circ}C$

**Answer: C**

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21. Relative lowering of vapour pressure of a dilute solution is 0.2. What is the mole fraction of non-volatile solute ?

A. 0.8

B. 0.5

C. 0.3

D. 0.2

**Answer: D**



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**22. Molar heat capacity at constant volume can be given as**

A.  $C_V = \frac{dE}{dT}$

B.  $C_V = \frac{dH}{dT}$

C.  $C_p = \frac{dE}{dT}$

D.  $C_p = \frac{dH}{dT}$

**Answer: A**



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**23.** The electrode potential  $E_{Zn^{+2}/Zn}$  of a zinc electrode or  $25^\circ C$  with an aqueous solution of  $0.1M ZnSO_4$  is

$$\left[ E_{(Zn^{+2}/Zn)} = -0.76V \right] \left[ \text{assume } \frac{2.3 - 3RT}{F} = 0.06 \text{ at } 298K \right]$$

A.  $+0.73V$

B.  $-0.79V$

C.  $-0.82V$

D.  $-0.70V$

**Answer: B**



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24. Density of carbon monoxide is maximum at

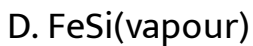
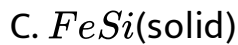
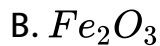
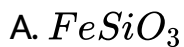
- A. 2 atm and  $600K$
- B. 0.5 atm and  $273K$
- C. 6 atm and  $1092K$
- D. 4 atm and  $500K$

**Answer: D**



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25. During the extraction of copper , the impurity ( $FeS$ ) is removed as slag by mixing the contaminated copper ore with silica and coke. The molecular formula of slag is

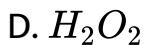
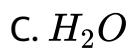
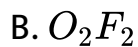
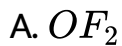


**Answer: A**



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**26.** The oxidation state of O-atom is + 2 in



**Answer: A**



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27. Which one of the following noble gas is obtained by radioactive disintegration ?

A. Kr

B. Ar

C. Rn

D. Xe

**Answer: C**



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28. Which of the pairs have almost similar size ?

A.  ${}_{22}\text{Ti}$  and  ${}_{40}\text{Zr}$

B.  ${}_{41}\text{Nb}$  and  ${}_{73}\text{Ta}$

C.  ${}_{39}\text{Y}$  and  ${}_{57}\text{La}$

D.  ${}_{20}\text{Ca}$  and  ${}_{31}\text{Ga}$

**Answer: B**



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29. The alkyl halide is converted into an alcohol by

A. addition

B. substitution

C. dehydrohalogenation

D. elimination

**Answer: B**



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**30.** Which of the following is the most powerful oxidising agent ?

A.  $F_2$

B.  $O_2$

C.  $Br_2$

D.  $I_2$

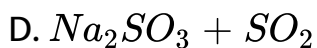
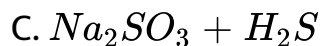
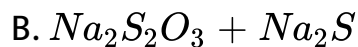
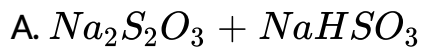


**Answer: A**



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**31.** Sulphur on boiling with  $NaOH$  solution gives



**Answer: B**



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**32.** The volume of oxygen evolved at STP by decomposition of 0.68g '20 volume' hydrogen peroxide solution is

- A. 2.24mL
- B. 22.4mL
- C. 224mL
- D. 2240mL

**Answer: C**

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**33.** Coordination compounds are the compounds in which the central metal atom is linked to atoms, ions or molecules by

A. covalent bonds

B. coordinate bonds

C. ionic and covalent bonds

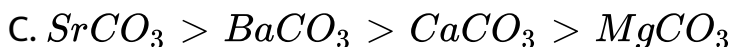
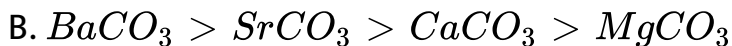
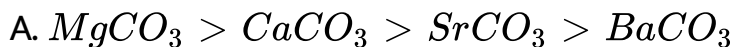
D. both ionic and coordinate bonds

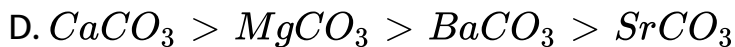
**Answer: B**



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**34.** To correct the order of stability of group II A metal carbonates is





**Answer: B**



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35. Which of the following test is not carried out of example the presence of  $-\text{COOH}$  group ?

- A. Litmus test
- B. Sodium bicarbonate test
- C. Ester test
- D. Bromine water test

**Answer: D**



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

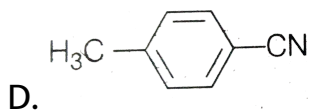
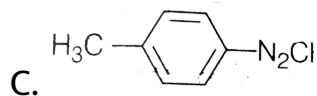
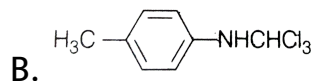
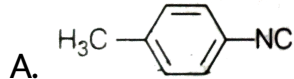
- A. 4,3and 2
- B. 2,3and4
- C. 4,2and 4
- D. 3,4and 2

**Answer: A**



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37. The reaction of chloroform with alcoholic  $KOH$  and p-toluidine forms



**Answer: A**

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**38.** The enzyme which can catalyse the conversion of glucose to ethanol is

A. zymase

B. invertase

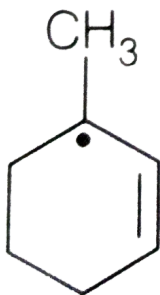
C. maltase

D. diastase

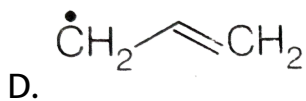
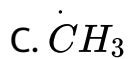
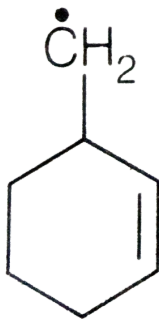
**Answer: A**

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39. Which among the following free radicals is most stable



A.



**Answer: A**

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40. The drug used against AIDS is

A. zidovudine

B. AZT



C. BHA

D. LSD

**Answer: B**



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**41.** Which one of the following halogens forms only one oxo acid ?

A.  $Br_2$

B.  $Cl_2$

C.  $F_2$

D.  $I_2$

**Answer: C**



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**42.** p H of a solution of HCl is 4,its molar concentration is

A. 4.0M

B. 0.4M

C. 0.0001M

D. 12.0M

**Answer: C**



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43. The complex ion  $[Cu(NH_3)_4]^{2+}$  is

- A. tetrahedral
- B. square planar
- C. Both (a) and (b)
- D. None of these

**Answer: B**



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44. When phenol is heated with  $CHCl_3$  and alcoholic  $KOH$ , salicylaldehyde is produced. This reaction is known as

- A. Rosenmund's reaction

B. Remimer- Tiemann reaction

C. Friedel-craft's reaction

D. Sommelet reactionxsx

**Answer: B**



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**45. Cod liver oil is**

A. solution

B. an emulsion

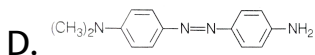
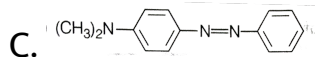
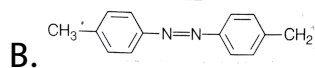
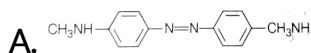
C. colloidal solution

D. suspension

Answer: B

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46. Aniline when diazotised in cold and then treated with dimethyl aniline gives a coloured product Its structure would be .



Answer: C

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47. Glucose gives silver mirror test with ammoniacal silver nitrate because it has

- A. aldehyde group
- B. ester group
- C. ketone group
- D. alcoholic silver nitrate

**Answer: A**



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48. I. Tensile strength of vulcanised rubber is almost ten times more than raw rubber .

II. Elasticity of raw rubber is very high.

Chose the correct options.

A. I is true II is false

B. I is false II is true

C. Both I and II

D. Neither I nor II

**Answer: A**



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**49.** Amoxillin is semi-synthetic modification of :

A. penicillin

B. streptomycin

C. tetracycline

D. chloramphenicol

**Answer: A**

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**50.** A correct statements is

A.  $[Co(NH_3)_6]^{2+}$  is paramagnetic

B.  $[MnBr_4]^{2-}$  is tetrahedral

C.  $[CoBr_2(en)_2]^-$  exhibits linkage isomerism

D.  $[Ni(NH_3)_6]^{2+}$  is not an inner orbital complex

**Answer: C**

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