



# CHEMISTRY

## BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

### SAMPLE PAPER 2 (SOLVED)

#### Part I

1. How many equivalents of sodium sulphate is formed when sulphuric acid is completely

neutralized with a base NaOH?

A. 0.2

B. 2

C. 0.1

D. 1

**Answer:**



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2. Zeolite used to soften hardness of water is, hydrated\_\_\_\_\_

A. Sodium aluminium silicate

B. Calcium aluminium silicate

C. Zinc aluminium borate

D. Lithium aluminium hydride

**Answer:**



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**3. Assertion:** Generally alkali and alkaline earth metals form superoxides.

**Reason:** There is a single bond between O and O in superoxides.

A. both assertion and reason are true and reason is the correct explanation of assertion

B. both assertion and reason are true but reason is not the correct explanation of assertion

C. assertion is true but reason is false

D. both assertion and reason are false

**Answer:**



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4. The value of  $\Delta H$  and  $\Delta S$  for a reaction are respectively  $30 \text{ kJ mol}^{-1}$  and  $100 \text{ KJ}^{-1}\text{mol}^{-1}$ . Then the temperature above which the reaction will become spontaneous is

A. 300K

B. 30K

C. 100K

D.  $20^{\circ}C$

**Answer:**



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5. If  $x$  is the fraction of  $PCl_5$  dissociated at equilibrium in the reaction,



then starting with 0.5 mole of  $PCl_5$ , the total number of moles of reactants and product at equilibrium is \_\_\_

A.  $0.5 - x$

B.  $x + 0.5$

C.  $2x + 0.5$

D.  $x + 1$

**Answer:**



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6. Which of the following concentration terms is/are independent of temperature?

A. molality

B. molarity

C. mole fraction

D. (a) and (c)

**Answer:**



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1. What is meant by plasma state? Give an example.



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2. Give the electronic configuration of  $Mn^{2+}$  and  $Cr^{3+}$ .



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3. Do you think that heavy water can be used for drinking purposes?



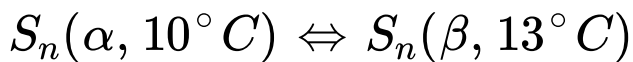
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4. Mention the methods used for liquifaction of gases.



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5. Calculate the entropy change of a process, possessing  $\Delta H_t = 2090 J mol^{-1}$



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6. What is reaction quotient?

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7. Write the structural formula for the following compounds.

(a) Cyclohexa-1,4-diene

(b) Ethynyl Cyclohexane.



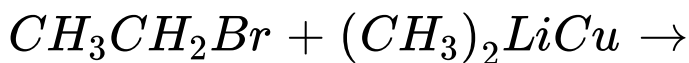
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8. What are free radical initiators? Give an example.



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9. Complete the reaction and mention name of the reaction.



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## Part Iii

1. A compound contains 50% of X (atomic mass 10) and 50% Y (atomic mass 20). Give its empirical formula.



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2. Explain Davison and Germer experiment.



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3. What are the importance of hydrogen bonding in proteins?



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4. What is the reason behind the cause of earh pain while climbin a mountain? How it can be rectified?



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5. A mixture of gases contains 4.76 mole of Ne, 0.74 mole of Ar and 2.5 mole of Xe. Calculate the partial pressure of gases, if the total pressure is 2 atm, at a fixed temperature.



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6. Write the various definition of first law of thermodynamics.



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7. How will you detect nitrogen from organic compounds?



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8. Distinguish between carbocation and carbanion.



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9. What are particulate pollutants? Explain any three



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## Part Iv

1. (i) The stabilization of a half filled d-orbital is more pronounced than that of the p-orbital why?

(ii) What are degenerate orbitals?



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2. (i) Explain the preparation of hydrogen using electrolysis.

(ii) Why hydrogen gas is used as fuel?



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3. (i) What is lattice energy?

(ii) Write down the Born-Haber cycle for the formation of  $CaCl_2$ .



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4. (i) What is the effect of added inert gas on the reaction at equilibrium.

(ii) Explain the equilibrium constants for heterogenous equilibrium.



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5. (i) Explain why the aquatic species are more comfortable in cold water during water season

rather than warm water during the summer?

(ii) What is osmosis?



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6. (i) Explain the shape of following molecule by using VSEPR theory.

(a)  $BeCl_2$

(b)  $NH_3$

(c)  $H_2O$

(ii) Which bond is stronger or  $\sigma$  or  $\pi$ ? Why?



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7. (i) How inductive effect helps to explain reactivity and acidity of carboxylic acids?

(ii)  $\text{HCOOH}$  is more acidic than  $\text{CH}_3\text{COOH}$ .

Why?



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8. (i) Suggest a simple chemical test to distinguish propane and propene.

(ii) Write a notes on Wurtz-Fittig reaction.



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9. An organic compound (A) with molecular formula  $C_2H_5Cl$  reacts with KOH gives compound B and with alcoholic KOH gives compound C. Identify A, B and C explain.



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10. Write an essay on water pollution.



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