### **MODEL QUARTERLY EXAMINATION 2022-2023**

Std 11 Max.Mark:70

Chemistry Time: 3:00

#### I. Choose the correct answer

15 X 1 = 15

- 1. Molecular mass is defined as the
- (a) mass of one atom compared with the mass of one molecule
- (b) mass of one atom compared with the mass of one atom of hydrogen
- (c) mass of one molecule of any substance compared with the mass of one atom of C-12
- (d) None of the above.
- 2. Bohr's model is not able to account for which of the following.
- (a) Stability of atom.
- (b) Spectrum of neutral Helium atom.
- (c) Energy of free electron at rest.
- (d) Calculation of radii of the stationary states.
- 3. Choose the correct codes for the following statements related to *s*-block elements. Here 'T' stands for true and F stands for false statement.
  - (i) They are all reactive metals with low ionization enthalpies.
  - (ii) Their metallic character and reactivity increase as we go down the group.
  - (iii) They are found in pure form in nature.
  - (iv) All the compounds of s-block elements are ionic in nature.
- (a) TTFF
- (b) TTFT
- (c) TTTF
- (d) TFFF
- 4. Splitting of spectral lines in an electric field is called
- a) Zeeman effect
- b) Shielding effect
- c) Compton effect
- d) Stark effect
- 5. For a person travelling to the peak of the mountain which of the following statement(s) is/are correct?
  - (i) Oxygen level goes on decreasing.
  - (ii) Gas law can be applied to this situation.
- (a) Both (i) and (ii)
- (b) Only (i)
- (c) Only (ii)
- (d) Neither (i) nor (ii)
- 6. **Assertion :** An exothermic process which is nonspontaneous at high temperature may become spontaneous at a low temperature.

**Reason:** There occurs a decrease in entropy factor as the temperature is decreased.

(a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.

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	Assertion is correct, reason is correct; reason is not a correct explanation for assertion
	Assertion is correct, reason is incorrect
	Assertion is incorrect, reason is correct.
	Which of the following is not a thermodynamic function?
	internal energy
b)	enthalpy
c)	entropy
d)	frictional energy
8.	Solubility of carbon dioxide gas in cold water can be increased by
a)	increase in pressure
b)	decrease in pressure
c)	increase in volume
d)	none of these
9.	Consider the following reversible reaction at equilibrium, $A + B \rightleftharpoons C$ , If the concentration of the reactants A and B are doubled, then the equilibrium constant will
a)	be doubled
b)	become one fourth
c)	be halved
d)	remain the same
	Which one of the following names does not fit a real name?
	3 – Methyl –3–hexanone
	4–Methyl –3– hexanone
	3– Methyl –3– hexanol
	2– Methyl cyclo hexanone.
	In an organic compound, phosphorus is estimated as
	$Mg_2P_2O_7$
	$Mg_3(PO_4)_2$
	$H_3PO_4$
	$P_2O_5$
	2. How many cyclic and acyclic isomers are possible for the molecular formula $C_3H_6O$ ?
a	b) 5 c) 9 d) 10
13	.Homolytic fission of covalent bond leads to the formation of
(a)	electrophile
(b)	nucleophile
(c)	Carbo cation
(d)	free radical
14	Decreasing order of nucleophilicity is
(a)	$OH->NH_2->-OCH_3>RNH_2$
(b)	$NH_2$ - > OH- > -OCH3 > RNH <sub>2</sub>
(c)	$NH_2$ - > $CH_3O$ - > $OH$ - > $RNH_2$
(d)	$CH_3O->NH_2->OH->RNH_2$
15	5. The geometrical shape of carbocation is
(a) I	inear (b) tetrahedral
(c) F	Planar (d) Pyramidal
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### II. Answer any six questions. But question no 22 is compulsory

 $6 \times 2 = 12$ 

- 16.Calculate the empirical and molecular formula of a compound containing 76.6% carbon, 6.38 % hydrogen and rest oxygen its vapour density is 47.
- 17. What are isoelectronic ions? Give examples.
- 18. Give the uses of heavy water.
- 19.A balloon filled with air at room temperature and cooled to a much lower temperature can be used as a model for Charle's law.
- 20.State the first law of thermodynamics.
- 21.State Le-Chatelier principle.
- 22. Give the structure for the following compound.
  - (i) tertiary butyl iodide
  - (ii) 1,3,5- Trimethyl cyclohex 1 -ene
  - (iii) 2,2-dimethyl-1-chloropropane
  - (iv) 3 Chlorobutanal
- 23. Write short notes on Resonance
- 24. Mention the following represent a set of nuclephiles?
  - (a) CN-, RCH<sub>2</sub>-, ROH, H<sub>2</sub>O, NH<sub>2</sub>-

# III. Answer any six questions. But question no33 is compulsory

 $6 \times 3 = 18$ 

- 25.Describe the Aufbau principle
- 26. Explain the pauling method for the determination of ionic radius.
- 27. How do you convert parahydrogen into ortho hydrogen?
- 28. State Gay Lusaac' law.
- 29.If an automobile engine burns petrol at a temperature of 816° C and if the surrounding temperature is 21° C, calculate its maximum possible efficiency.
- 30. Derive the relation between  $K_P$  and  $K_C$ .
- 31. Give a brief description of the principles of Fractional distillation.
- 32. What are electrophiles and nucleophiles? Give suitable examples for each.
- 33.0.30 g of a substance gives 0.88 g of carbon dioxide and 0.54 g of water calculate the percentage of carbon and hydrogen in it.

# IV. Answer all the question

5 X 5 = 25

34.a. Explain briefly the time independent schrodinger wave equation?

#### OR

- b. (i) Explain the periodic trend of ionisation potential.
- (ii) Why the first ionisation enthalpy of sodium is lower that that of magnesium while its second ionisation enthalpy is higher than that of magnesium?
- 35.a. (i) Compare the structures of  $H_2O$  and  $H_2O_2$ .
  - (ii) a Compound on analysis gave Na = 14.31% S = 9.97% H= 6.22% and O= 69.5% calculate the molecular formula of the compound if all the hydrogen in the compound is

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present in combination with oxygen as water of crystallization. (molecular mass of the compound is 322).

OR

- b. Balance the following equation by using oxidation number & ion electron method.  $KMnO_4 + SnCl_2 + HCl \rightarrow MnCl_2 + SnCl_4 + H_2O + KCl$
- 36.a. Write the Van der Waals equation for a real gas. Explain the correction term for pressure and volume.

OR

- b. List the characteristics of internal energy.
- 37.a.State the various statements of second law of thermodynamics.

OR

- b. Deduce the Vant Hoff equation.
- 38.a. Explain varions types of constitutional isomerism (structural isomerism) in organic compounds

OR

- b. i) Explain inductive effect with suitable example.
- ii) Give examples for the following types of  $\beta$  elimination reactions

# PREPARE BY

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