SET 1

INTERNATIONAL INDIANSCHOOLBURAIDAH

TERM EXAMINATION 2019-20

Subject: Chemistry **Max: Marks: 70**
Class: XI **Time: 3hours**

General Instructions

1.All questions are compulsory
2.Question numbers1 to 20are very short answer questions carry1 mark each.
3.Question numbers 21 to 27 are short answer questions carry 2marks each.
4.Questions numbers28 to 34 are also short answer questions carry 3marks each.
5.Questionsnumbers 35 to 37 are long answer type questions, carry 5marks each.
6.Use log tables if necessary use of calculator is not permitted.

1. What is the shape and bond angle of BeF_2 molecule using VSEPR theory? 1
2. Electron gain enthalpy of Be and Mg are positive. Why? 1
3. State Gay Lussac's law of gaseous volume. 1
4. What is the shape of the $H_2C{=}O$ and CH_3-F? 1
5. Write the electronic configuration of Cr(Z=24). 1
6. What is ψ^2? is the value of quantum no: 'm' if $l = 2$? 1
7. Write the IUPAC name of the following compounds. 1
   i)$CH_3CH_2CH_2NH_2$ ii) CH_3-$CH{=}CH_2$-$C{\equiv}CH_2$
8. What is the atomic number of the element whose outer electrons are represented by $3d^6$? 1
9. Arrange the following in the order of increasing atomic radii? 1
   Al^{3+}, Na^+, Mg^{2+}, Ne
10. Define I mol. 1
11. What is the bond order in N_2 molecule? 1
12. Draw the Lewis symbol of Mg^{2+} ion.(Z=12) 1
13. Which quantum number does not follow from the solution of Schrodinger Wave equation? 1
14. What is the decreasing order of repulsion of various electron pairs according to VSEPER theory? 1
15. What is ψ^2? 1
16. The bond order value is an important property of a molecule. 1

How is bond order related to bond length?

17. Which of the two is smaller in size and why? Na and Na^+. 1
18. How many electrons are present in all sub shells with n + *l*=5? 1
19. How many number of 2p electrons are having spin quantum number s= - $^1/_2$ 1
20. What is the nature of oxides formed by s-block elements? 1
21. State Heisenberg's uncertainty principle. 2
22. Why molality is preferred over molarity in expressing the concentration of a solution? 2
23. What are the general characteristics of f-block elements? 2
24. What do you know about 'expanded octet'? Explain with suitable example. 2
25. Write the similarity and differences between 1s and 2s orbital. 2
26. Write the IUPAC name of the following compounds 2

(a)

(b)

27. Why Hund's rule is called rule of maximum multiplicity? 2
28. (1) Which one of the following has high dipole moment NH_3 or NF_3. Why? 3
(2) First ionization enthalpy of N is higher than that of O. Why?
29. Give the main postulates of Bohr model of atom. 3

30. Write the structures of the following organic compounds. 3
a) 2,5,6 – Trimethyloctane (b) Hexane-2,4-dione (c) 5-oxohexanoic acid

31. Which of the following sets of quantum numbers are not possible? 3
1) n = 2, l = 2, m= 0, s = + ½
2) n=1, l = 0, m= 0, s = - ½
3) n = 3, l = 2, m= -3, s = + ½
4)n = 2, l = 1, m = 1, s = + ½. Justify your answer.

32. Calculate the molarity of NaOH in the solution prepared by dissolving Its 4g in its enough water to form 250ml of the solution. 3

33. Calculate the uncertainty in position of dust particle with mass equal to 1mg If the uncertainty in its velocity is $5.5 \times 10^{-20} ms^{-1}$. 3

34. (1) How will you justify the presence of 18 elements in the fifth period of the periodic table? 3
(2) Alkali metals have least ionization enthalpy. Why?

35.1. Define electron gain enthalpy. 5

2.Among the elements B,Al,C and Si, find out the suitable element for the following characteristics.

a. Highest first ionization enthalpy. b. Most electron gain enthalpy.

c. Largest atomic size. d. Most metallic character.

Or

3. What are the factors influence the magnitude of electron gain enthalpy?

4. The second ionization enthalpy of the elements of the second period are given below.

Element	IE_2(KJ/mol)
Li	7294
Be	1756
B	2430
C	2354
N	2856
O	3396
F	3377
Ne	3966

a.IE_2 of Li is so much higher than that of all other elements. Why?

b. What is the general trend from Be to Ne?

c. IE_2 of F is less than that of O. Why?

36.a. Which energy level does not have a p-orbital? 5

b. Which is the first energy level containing f-orbital?

c. Which orbital does not have directional characteristics?

d. What are degenerate orbitals?

e. Which d-orbital does not have four lobes?

Or

f) Quantum numbers give the address of an electron. Explain all the four quantum numbers.

37.An inorganic compound gave the following percentage composition. 5

Na=29.11%, S=40.51% and O=30.38%.

Calculate the empirical formula of the compound.

(At: mass: Na=23u, S=32u, O=16u)

Or

a) Define limiting reagent.

b) 50kg of $N_2(g)$ and 10kg of $H_2(g)$ are mixed to produce $NH_3(g)$. Calculate the $NH_3(g)$ formed. Identify the limiting reagent in the production of NH_3 in this solution.