15.



Gurbachar Singh L

GURU HARKRISHAN PUBLIC SCHOOL

{Running under the aegis of the GHPS (ND) Society}
HALF YEARLY EXAMINATION

SESSION- (2017 - 18)

SUBJECT: CHEMISTRY

CLASS -XI

TIME: 3 HRS.

MAX. MARKS: 70

General Instructions:-

(i) All questions are compulsory.

(ii) Q1 to Q5 are very short answer type and carry 1 mark each.

(iii) Q6 to Q10 are also short answer type and carry 2 mark each.

(iv) Q11 to Q22 are short answer type and carry 3 mark each.

(v) Q23 is value based question and carries I marks.

(vi) Q24 to Q26 are long answer type and carry 5 mark each.

(vii) Use of calculators is not allowed, Log tables can be used for calculation.

Q1. Express the following in the scientific notation.
(a) 0.0025 (b) 234,000

Q2. Write the electronic configuration of chromium (z=24).

Q3. What is the basic difference between the term electron gain enthalpy & electro negativity?

Q4. Distinguish between a sigma and a pi bon d.

Q5. State Charle's Law.

Q6. Which out of NH₃ & NF₃ has higher dipole moment and why?

- Q7. A vessel of 120ml capacity contains a certain amount of gas at 35°c and 1.2 bar pressure. The gas is transferred to another vessel of volume 180ml at 35°. What would be its
- Q8. Calculate the molarity of NaOH in the solution prepared by dissolving its 4g in enough water to form 250ml of the solution.
- Q9. Using s,p,d notations, describe the orbital with the following quantum numbers.

 (a) n=1, l=0

 (b) n=3, l=1

 (c) n=4, l=2

 (d) n=4, l=3
- Q10. Use molecular orbital theory to explain why the Be2 molecule does not exist?
- Q11. Explain the structure of CO₃² ion in terms of resonance.
- Q12. Consider the following species.
- (a) What is common in them?
- (b) Arrange then in the order of increasing ionic radii.
- (c) Define the term used for such species.
- Q13. 50kg of N₂ & 10kg of H₂ are mixed to produce NH₃. Calculated the amount of NH₃ formed. Identify the limiting reagent in the production of NH₃ in this situation.
- Q14. What are the frequency and wavelength of a photon emitted during a transition from n=5 state to n=2 state in the hydrogen atom?

- Q15. An element with mass no 81 contains 31.7% more neutrons as compared to proton. Assign a symbol to the element.
- Q16. Compare the relative stability of following species and indicate their magnetic properties. O₂, O₂⁺ O₂ (Superoxide) O₂⁻² (Peroxide).
- Q17. Calculate the volume occupied by 8.8g of CO₂ at 31.1°C and 1bar pressure. R=0.083 bar L K⁻¹ mol⁻¹.
- Q18. Calculate wave number and frequency of yellow radiation having wavelength 5800 Armstrong.
- Q19. Write short note on:-
 - (a) Photoelectric effect
 - (b) Heisenberg's uncertainty principle.
- Q20. Write short note on:-
 - (a) Hund's Rule of maximum multiplicity.
 - (b) Pauli's exclusion principle.
- Q21. Describe the hybridization in case of PCI₅. Why are the axial bonds longer as compared to equatorial bonds?
- Q22. The density of 3M solution of NaCl is 1.25g/ml. Calculate the molality of the solution.
- Q23. Sohan told Mohan that Mathura refinery near Agra is responsible for yellowing of marble of Taj Mahal. Mohan said how it is possible. The refinery is located at a distance. Then Sonan explained all the president involves.

- (a) What are the values associated with Sohan?
- (b) What could be Sohan's explanation?
- (c) What is Global Warming?
- (d) What is Smog?
- Q24. A compound contain 4.07% hydrogen. 24.27% carbon & 71.65% chlorine. Its molar mass is 98.96g. What are the empirical & molecular formulas?

A welding fuel gas contains carbon & hydrogen only. Burning a small sample of it in oxygen gives 3.38g of CO2, 0.690g of water and no other products. A volume of 10.0L (measured at STP) of this welding gas is found to weigh 11.6g. Calculate (i) Empirical Formula (ii) Molar mass of the gas (iii) Molecular formula.

gs ... Explain Sphiy thraidshou in methano.

(b) Explain why cation are smaller and anions larger in radii than their parent atoms?

(a) Explain sp² hybridisation in ethane.

- (b) Define Ionization enthalpy & list the factors on which it depends.
- Q26 A neon-dioxygen mixture contains 70.6g dioxygen & 167:5g neon. If pressure of the mixture of gases in the cylinder is 25bar. What is the partial pressure of dioxygen & neon in

Pay wast is a fixed as the difference between the mass of displaced and mass of the balloon. Calculate the pay load when a balloon of radius 10m, mass 100kg is filled with Helium at

(Density of air= 1.2kg m⁻³ & R= 0.083 bar dm³k⁻¹mol⁻¹)