

**CHEMISTRY - HALF YEARLY EXAMINATION**  
**HAMDARD PUBLIC SCHOOL**  
**CLASS - XI**

field in the area  
 in way that  
 just as  
 we saw it  
 part 2 electron

1/8

kg/s

TIME: 3 Hours

Max. Marks

General Instructions

1. All questions are compulsory.
2. Q. No. 1 - 8 are very short answer types carrying 1 mark each.
3. Q. No. 9 - 18 are short answer types carrying 2 marks each.
4. Q. No. 19 - 27 are of short answer type carrying 3 marks each.
5. Q. No. 28 - 30 are of short answer type carrying 5 marks each.

**CHEMISTRY**

**SECTION-A [1 MARK QUESTIONS]**

1. Write the electronic configuration of Cr?
2. Why is the electron gain enthalpy positive for noble gases?
3. Define orbital?
4. How many atomic orbital are present in fourth shell?
5. Insulin contains 3.2% sulphur. Calculate minimum molecular mass of insulin?
6. Which hybridization has sulphur in SO<sub>2</sub>?
7. Draw the shape of orbital dz<sup>2</sup>?
8. Which atom or ion has the largest size Na<sup>+</sup>, Na?

full field sulphur  
 different  
 group 16 - 3.2%  
 1 - 3.2/16

3 sp  
 4 sp<sup>2</sup>  
 5 sp<sup>3</sup>  
 6 sp<sup>3d</sup>  
 7 sp<sup>3d<sup>2</sup></sup>  
 8 sp<sup>3d<sup>2</sup></sup>

**SECTION-B [2 MARKS QUESTIONS]**

9. Define electron affinity? Arrange the following elements in the order of increasing electron affinity?  
 O, S, Se, Te
10. Calculate the number of radial nodes and angular nodes present in 4s and 3p orbital's?
11. Explain penetration of subshell?
12. Explain why electron gain enthalpy of fluorine is less negative than that of chlorine?
13. What is an ionic bond? With two suitable examples explain the difference between an ionic bond and a covalent bond?
14. Define lattice energy. How is it related to the stability of an ionic compound?
15. In which of the following pair of salts, which is more stable and why?  
 (i) Fe<sup>2+</sup>, Fe<sup>3+</sup>
16. Calculate the number of unpaired electrons in  
 (i) P (ii) Si (iii) Fe (d) Zn
17. The mole fraction of ethyl alcohol in water is 0.4. Calculate molality?
18. Explain why Nitrogen has high Ionisation potential than oxygen?

3 sp  
 4 sp<sup>2</sup>  
 5 sp<sup>3</sup>  
 6 sp<sup>3d</sup>  
 7 sp<sup>3d<sup>2</sup></sup>  
 2, 2, 1  
 2, 2, 1

**SECTION-C [3 MARKS QUESTIONS]**

19. (a) Define electronegativity?

tendency  
 to attract the  
 e<sup>-</sup>

$\lambda = \frac{h}{p}$   
 $p = \frac{h}{\lambda}$   
 $E_{NC} \uparrow H = 6.67 \times 10^{-34} \times 10^{-10}$   
 $E_{NC} \uparrow Be$   $IE \uparrow Be$   $Causes$   $\frac{2}{1}$   $low$   $value$   $=$   $same$

- (b) Explain coordinate bond with example?  
 20. (a) Define stationary orbit?  
 (b) Which series of hydrogen spectrum lies in visible region?  
 21. Give reasons for the following?  
 (a) Cationic radius is always smaller than that of neutral atom.  
 (b) Be has higher first Ionisation potential than B.  
 (c) Elements in the same group have similar physical and chemical properties.  
 22. (a) Derive de-broglie equation?  
 (b) Arrange the following in the order of increasing electronegativity?  
 F, Cl, Br, I

23. Calculate the weight of CaO that can be obtained by heating 200 kg limestone which is 95% pure?

OR

Light of wavelength 5000 Å falls on a metal surface of work function 1.90eV. Find the kinetic energy of photoelectrons?

24. (a) Calculate the momentum of moving particle which has a wavelength of 200 Å?  
 (b) Calculate the ratio of the radii of the fifth orbits of the He<sup>+</sup> and Li<sup>2+</sup>?  
 25. Calculate the molality of 3M solution of NaCl whose density is 1.25 gm/ml?  
 26. A 100 watt power source emits green light at a wavelength of 5000 Å. How many photons per minute are emitted by the source?

OR

Explain (a) photoelectric effect (b) Planck's theory

27. Explain  
 (a) Heisenberg's uncertainty principle.  
 (b) 10 gm of hydrogen reacts with 3 gm of oxygen predict limiting reagent and calculate the amount of water formed.

**SECTION-D [5 MARKS QUESTIONS]**

28. (a) Explain Bohr's postulates?  
 (b) The radius of first Bohr orbit of hydrogen atom is 0.529 Å. Calculate the radii of  
 (i) Third orbit of He<sup>+</sup> ion. (ii) Second orbit of Li<sup>2+</sup> ion.  
 29. (a) Explain  
 (i) Hund's rule (ii) Pauli's Exclusion principle (iii) Aufbau principle  
 (b) Arrange the following orbital in the order of increasing energy?  
 (i) 1s, 2s, 3s, 2p (ii) 5f, 6d, 7s, 7p  
 30. (a) Differentiate between molality and molarity? Why is molality preferred over molarity in expressing the concentration of solution?  
 (b) Calculate molarity of pure water (density of water = 1 gm/ml)?  
 (c) Calculate the number of protons in 18 gm H<sub>2</sub>O?

*Handwritten notes:*  
 imp  
 h delt  
 p e v  
 also the m  
 1 - 2  
 2 - 1  
 10 - 1 x 3  
 218