

Q.10

Ans:

Formation of Ionic Bonds: In the formation of an ionic bond, an atom loses electrons and changes into a positive ion (cation) whereas another atom gains this electron and changes into a negative ion (anion). These cations and anions have opposite charges. They attract one another by the electrostatic force of attraction. The force of attraction that holds the oppositely charged ions together is called an ionic bond or electrovalent bond. Generally, an ionic bond is formed between the atoms of two different groups, metal and non-metal.

Q.10

Define ionic compounds.

Chapter-4

Chemical Bonding

Ans:

Ionic Compounds: Compounds that contain ionic bonds are called ionic compounds such as sodium chloride, potassium chloride, magnesium fluoride etc.

Q.11

Explain the formation of ionic bond in:

- (1) *the reaction between sodium and chlorine*
 - (2) *the reaction between magnesium and oxygen*
- (a) The Reaction between Sodium and Chlorine: Sodium atom is a metal of 1A group of the periodic table and has only one electron in the outermost shell. The electron arrangement of the sodium atom is 2, 8, 1. By losing one electron from the outermost shell, sodium forms cation (Na^+) whereas chlorine atom is non-metal of VIIA group and has seven electrons in its outermost shell. The electron arrangement of the chlorine atom is 2, 8, 7. Since the chlorine atom has seven electrons in its outermost shell, it needs one electron to complete the octet. By gaining one electron, the chlorine atom now has eight electrons in its outermost shell and a chloride ion is formed (Cl^-).

Na

2,8,1

$\text{Cl} + e$

2,8,7

$\text{Na}^+ + e$

2,8

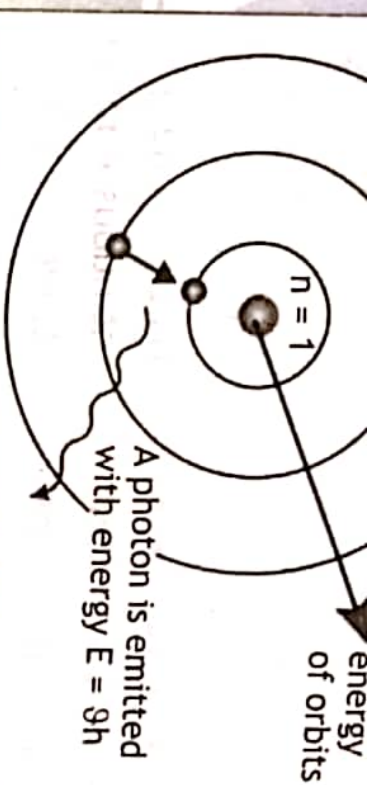
Cl^-

2,8,8

(Sodium chloride)

Q.11

Niel Bohr's Atomic model



Q.19 Explain the limitation of Bohr's Atomic Model.

Ans:

Limitations of Bohr's Atomic Model:

- (i) Bohr's model of an atom failed to explain the Zeeman Effect (effect of magnetic field on the spectra of atoms).
- (ii) It also failed to explain the Stark effect (effect of electric field on the spectra of atoms).
- (iii) It deviates from the Heisenberg Uncertainty Principle.
- (iv) It could not explain the spectra obtained from larger atoms.
- (v) It explains the mono-electronic species like H^{+1} , Li^{+2} , B^{+3} .

Q.20 What is quantum?

Ans:

A discrete quantity of energy proportion that can exist independently.



BOARD OF INTERMEDIATE & SECONDARY EDUCATION, MIRPURKHAS, SINDH.
SECONDARY SCHOOL CERTIFICATE PART - I & II, (CLASS IX & X) ANNUAL EXAMINATION 2022

CHEMISTRY-I

TIME ALLOWED: 02 HOUR 35 MINUTES

MARKS: 38

SECTION - B

ENGLISH VERSION

NOTE: ANSWER ANY EIGHT (08) OF THE FOLLOWING QUESTIONS.
 ALL QUESTIONS CARRY EQUAL MARKS.

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- Q. No. 02: Define Chemistry and enlist the names of branches?
 Q. No. 03: Define following terms with examples (a) Molecule (b) Mole (c) Element
 Q. No. 04: What are Limitations of Bohr's atomic model?
 Q. No. 05: How many protons, electrons and Neutrons are present in the followings
 $U_{92}^{235} - Cl_{17}^{37} - Fe_{52}^{56}$
 Q. No. 06: Determine the demarcation of periodic table into s, p, d & f blocks
 Q. No. 07: The pressure of a sample of a gas is 3atm and volume is 5 liters if the pressure is reduced to 2atm, what will be the new volume
 Q. No. 08: Convert the following units
 a) 100 C° to K (b) 170 K to C°
 Q. NO. 09: Balance the following equations.
 (i) $NH_3 + O_2 \longrightarrow NO + H_2O$
 (ii) $KNO_3 \longrightarrow KNO_2 + O_2$
 (iii) $Ca + H_2O \longrightarrow Ca(OH)_2 + H_2$
 (iv) $Co + O_2 \longrightarrow Co_2$
 Q. NO. 10: Differentiate the properties of polar and Non polar compounds
 Q. NO. 11: Write names and symbols of Alkali metals.
 Q. NO. 12: Why ionic compounds are solid?
 Q. NO. 13: Distinguish between periods and groups

SECTION - C

NOTE: ANSWER ANY TWO (02) OF THE FOLLOWING QUESTIONS.
 ALL QUESTIONS CARRY EQUAL MARKS.

12

- Q. No. 14: Define ionic bond and discuss formation of NaCl:
 Q. No. 15: Define Evaporation in Liquids and explain factors affects evaporation.
 Q. No. 16: Describe dry cell with diagram

URDU VERSION

24

نوٹ: مندرجہ ذیل میں سے آٹھ (08) سوالات کے جوابات لکھیں۔ تمام سوالات کے نمبر مساوی ہیں۔

- سوال نمبر 02: علم کیمیا کیا ہے؟ مثالوں کے ہم تحریر کریں
 سوال نمبر 03: مندرجہ ذیل کی تعریف بیان کریں۔
 (الف) مالیکیول (ب) مول (ج) عنصر
 سوال نمبر 04: بویئر کے ایٹمی نظریے کی خاص کیفیات بیان کریں۔
 سوال نمبر 05: مندرجہ ذیل میں کتنے پروٹان، الیکٹران اور نیوٹران موجود ہوتے ہیں۔
 $U_{92}^{235} - Cl_{17}^{37} - Fe_{52}^{56}$
 سوال نمبر 06: عناصر کی دوری جدول کی درجہ بندی s, p, d اور f بلاکس کے لحاظ سے بیان کریں۔
 سوال نمبر 07: کسی سیلسنڈم کے اندر دباؤ کس ہے۔ جس کا دباؤ 3atm ہے۔ اگر اس کا دباؤ 2atm کر دیا جائے تو نیا حجم معلوم کریں۔
 سوال نمبر 08: مندرجہ ذیل کو تبدیل کریں۔
 (a) 100 C° to K (b) 170 K to C°

Differentiate between periods and groups.

Ans:

The differences between periods and groups are as follows:

8 Nov 13

Periods	Groups
Horizontal rows of periodic table are called periods.	Vertical columns of periodic table are called groups.
In a period from left to right, elements change their characters gradually.	In a group from top to bottom elements have same characters.
Size of the atoms decrease from left to right in period.	Size of the atom increases from top to bottom in a group.
Valency of elements increases first up to group IV and then decreases up to Group O.	Valency of elements remains same in a group.

Reasons

III-A is a metalloid?

10. Why ionic compounds are solids?

Q NO: 12

Ans: Ionic compounds are solids and somewhat hard and they have high melting and boiling points because of a strong force of attraction between positive and negative ions.

14. Ionic bonds are the strongest bonds.

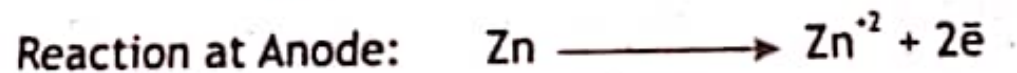
Q.15 What is a dry cell?

Ans: Dry Cell: It is also known as Leclanche cell. It is a type of primary cell which produce electricity using a redox reaction between the chemical substances placed in it. It uses zinc as an anode, manganese dioxide as cathode and aqueous ammonium chloride (NH_4Cl) or zinc chloride (ZnCl_2) as electrolyte.

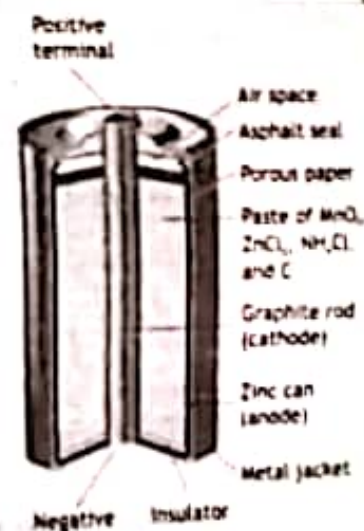
Chapter-7 Electrochemistry

A copper cap is fixed on the top of the carbon rod for the conduction of electricity.

Zinc and graphite are then connected by a metal wire as a result following chemical reactions take place.



It produces a potential of 1.5 volt.



Differences

1. Differentiate the properties of polar and non-polar compounds:

Ans: *Difference Between Polar and Non-polar Compounds*

Polar Compounds	Non-polar Compounds
Polar covalent compounds are soluble in water.	Nonpolar covalent compounds are generally insoluble in water.
Polar covalent compounds usually conduct electricity due to the formation of ions with water.	Non-polar covalent compounds do not conduct electricity in the solid, molten or aqueous solution.
Polar covalent compounds are insoluble in a non-polar solvent.	Non-polar covalent compounds are soluble in a non-polar solvent like petrol, benzene etc.
Few examples of polar covalent compounds are H_2SO_4 , H_2O , HCl , HF , HBr , HI	Few examples of non-polar covalent compounds are CO_2 , CH_4 , C_2H_6 .

2. What is the difference between lone pair and bond pair?

Ans: *Difference Between Lone pair and Bond Pair*

Bond Pair	Lone Pair
Bond pair is a pair of electrons that are in a bond.	Lone pair is a pair of electrons that are not in a bond.
They are always in bonds.	They are not in bonds but can form bonds by

total number of electrons in the valence shell of the element.

Q no.
11

Group 1 A (Alkali Metal) or Lithium Family.

- (i) This group includes Lithium (Li), Sodium (Na), Potassium (K), Rubidium (Rb), Cesium (Cs) and Francium (Fr).
- (ii) Their valence shell contains one electron.
- (iii) On reaction, they lose one electron and form a univalent positive ion.