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PROGRAMMA SVOLTO di SCIENZE NATURALI
CLASSE 2[^]G – Anno Scolastico 2025-26 - Prof. Sandomenico Giovanna

CHIMICA GENERALE E INORGANICA capitoli 1,2,3,4,5,10,11,12,13,14,15,16, 17,22
del libro "Chemistry for Cambridge IGCSE, Coursebook", Harwood, Lodge e Milligton
(Cambridge Assessment International Education)

1. States of matter, change of state and its properties, kinetic particle theory of matter (cap.1)
2. Pure substances and mixtures, diffusion in fluid (cap1)
3. Atoms and elements, structure of the atom, characteristics of protons, neutrons and electrons, proton number and mass number, electronic configuration, periodic table (cap 2)
4. Chimica bonding, metals and non-metals, covalent bonding, simple molecular elements and compound, ionic bonding, ions, giant ionic lattice structures, giant covalent structures, metallic bonding, physical properties of simple covalent compounds, physical properties of ionic compounds(cap3)
5. Formulae of elements,naming chimica compounds, formulae of compounds (ionic, covalent), balance symbol equations, ionic equations, relative atomicmass of elements, calculating reactive masses from equations (cap4)
6. The mole, calculations involving the mole, empirical and molecular formula for simple covalent molecole, percentage yield and percentage purità, Avogadro's law, molar gas volume, concentration of solutions (cap.5)
7. Electrochemistry, conductivity in solids, conductivity in liquids, difference between conductivity in solids and electrolytes, electrolysis in molten ionic compounds, electrolysis of solutions, electrolysis of salt solutions, electrode half-equations in electrolysis, electrolysis of copper sulfate with copper electrodes, electroplating (cap6)
8. Physical and chimica changes, exothermic and endothermic reactions (CAP7)
9. Redox reactions, combustion, oxidation and reduction, oxidation numbers (CAP10)
10. Acids and bases, the nature of acids and bases, alkalis and bases, metal oxides and nn-metal oxides, reactions of acids,, strong and weak acids and alkalis (CAP 11)
11. Preparation of salts, solubilità of salts, preparing insoluble salts by precipitation (CAP12)
12. The periodic table, position of hydrogen in the periodic table, periodic properties and their trends, main groups (CAP13)
13. The properties of metals and non-metals, chimica reaction of metals with air, water, dilute acids, uses of metals, alloys (CAP14)

14. Reactivity of metals, reactivity series, metal displacement reactions (CAP16)
15. Extraction and corrosion of metals, metal extraction and the reactivity series, extraction of aluminium from its ore, corrosion of metals (CAP16)
16. Chemistry of our environment, air quality, carbon dioxide, methane and climate change, green house gases, global warming, climate change (CAP17)
17. Experimental design and separation techniques, planning and experimental investigation, selecting the correct apparatus, accuracy and precision, repetibility and reproducibility, source of error and display of observations, safety (CAP21)
18. Chemical analysis, test to identify common cations and anions, : flame tests, aqueous sodium hydroxide, precipitation with aqueous ammonia, carbonate ions, halide ions, sulfate ions, nitrate ions, test to identify common gases (CAP22)

COMPITI PER IL PERIODO DI SOSPENSIONE DELLE ATTIVITA' DIDATTICHE:

- **Compilare un quaderno o un file Word con le definizioni per i seguenti termini chimici o processi utilizzando il manual di testo come riferimento (dovete saperle bene, non basta studiare la definizione dal glossario ma comprendendone il significato quindi rivedete le corrispondenti pagine del libro in cui è trattato l'argomento):**

matter, states of matter, evaporation, solidification, fusion, sublimation, heating and cooling curves, kinetic particle theory of matter, solution, diffusion, mixture (homogenous and heterogeneous), solution, pure substance, atom, element, proton, neutron, electron, subatomic particles, relative atomic mass, mass spectrometer, electronic configuration, the Periodic Table, group number, period number, nucleus, electron ion, isotope, atomic number, mass number, atom, cation, anion, chemical bonding, ionic bonding, covalent bonding, metal bonding, non metallic substances, metallic substances, compound, dot and cross diagram, giant structures (lattice ionic structures, ionic lattice structures, metallic lattices), octet rule, word equation reactants, products, chemical formulae, mole, Avogadro's constant, limiting reactants, percentage yield, percentage purity, molar volume of gas, Avogadro's law, concentration of solutions (pag 113), electrical conductor, electrode, battery, insulator, electrolyte, electrolysis, petrol, cathode, anode, half-equations, electroplating, physical change, chemical change, exothermic reaction, endothermic reaction, combustion, oxidation, reduction, respiration, corrosion, rancid, redox reaction, reducing agent, oxidation reagent, oxidation numbers, oxidation, reduction, acid, base, alkalis, the pH scale, metal oxides, non-metal oxides, acidic oxide, basic oxide, amphoteric compound, dissociation, strong acid, weak acid, salt, solubility, insoluble and soluble substance (pag 246), precipitation (pag 252), metalloid, main-group elements, transition elements, alkali metals, periodic property, noble gases, halogens, physical properties (electrical conductivity, malleability, ductility, density, thermal conductivity, hardness, 'sonorous'), chemical properties (reactivity with air, water, dilute acids or steam), alloy, reactivity, ore, limestone, mineral, bauxite, cryolite, painting, oiling and greasing, plastic coating, galvanising, sacrificial protection, composition of air, air pollution, atmosphere, photosynthesis, pollutants, global warming, climate change, particulates, acid rain, desulfurisation, photochemical smog, acid-base reaction, catalytic converter, incomplete combustion, complete combustion, greenhouse gases, greenhouse effect, photochemical smog, chlorophyll, renewable resources, apparatus (pag 407), calibration, resolution, accuracy, precision, repeatable, reproducibility, control variable, independent variable, dependent variable, random error, systematic error, anomalous, zero error,

qualitative analysis (pag 428),

Conoscere i chemical symbol e the names of main inorganic compounds (vedi fotocopia consegnata durante l'anno).

Saper scrivere la formula di un composto ionico o covalente (pag 77-79)

Sapere 'An overview of metal reactivity (le reazioni fondamentali elencate pag 305)

Sapere bene: tabella 14.4 pag 287, tabella 13.1 pag 263, tabella 13.3 (pag 266), tab 13.5 (pag 269), tab 14.1-14.2 (pag 280-281), tab 15.2 (pag 299), figura 15.12 (pag 305), tab 22.1 (pag 429), tab 22.2 (pag 431), tab. 22.3 (pag 432), tab 22.4 (pag 436), tab 22.5 (pag 439), tab 11.5 (pag 226), tab 11.4 (pag 225), tab 11.1 (pag 221), tab 11.6 (pag 228), tab 232 (pag 232), tab. 4.3 (pag 79), tab 4.4 (pag 81), tab 3.1 (pag 51), tab 2.6 (pag 39), tab 2.2 (pag 34)

ESERCIZI (da svolgere sul quaderno):

CAP 1 n. 1-9 (li abbiamo fatti in primo); CAP 2 n. 1-4 (pag 34), n. 1-5 (pag 45-46), CAP.3 n. 1-4 (pag 56-57), n. 5-7 (pag 60), n. 8-10 (pag 66-67), n. 1-4 (pag 70-71), CAP. 4 n. 1-3 (pag.86), n. 4-6 (pag 87), n. 7-8 (pag.92), 1-4 (pag 95-97), CAP.5 n.1-3 (pag. 106), n.4-6 (pag. 113), n 7-9 (pag 120), CAP.6 n1-5 (pag 122), n. 1-3 (pag 130), n4-7 (pag 139), n1-5 (pag 144-146), CAP.7 n1-2 (pag 160), questions n1-3 (pag 207), n.4-6 (pag 209), n7-9 (pag 212), n1-5 (pag 216-217), CAP.11 1-3 (pag 224), n4-6 (pag 227), n.7-9 (pag.229), n10-12 (pag 236), n1-3 (pag 239), CAP12 n 7-9 (pag 254), CAP.13 n.1-3 (pag 267), n. 7-10 (pag 272), n1-5 (pag 274), n1-3 (pag 280), n4-6 (pag 283), n7-9 (pag 288), n1-5 (pag 292), n1-3 (pag 300), n4-7 (pag 304), n1-4 (pag 306-307), CAP.16 n4-6 (pag 316), n7-9 (pag 319), n2-5 (pag 322-323), CAP 17 n1-5 (pag 331), m6-9 (pag 334), n1-5 (pag 341-342), CAP21 n1-3 (pag 410), CAP22 n 1-3 (pag 429), n4-6 (pag 431), n7-10 (pag 434), n 11-14 (pag 437), 15-21 (pag 440-441), n1-5 (pag 444-445),