

**Fill in your A00 number and name correctly on the scantron. Attempt all the questions and fill in the bubbles with your answers.**

Use Avogadro's number (A) =  $6.022 \times 10^{23}$  particles

- How many significant figures are in 0.05040?  
(a) 2                      (c) 4                      (e) 6  
(b) 3                      (d) 5
- An example of a chemical property is:  
(a) Freezing point              (c) Melting point              (e) Boiling point  
(b) Flammability              (d) Density
- How many neutrons are in the following isotope:  $^{131}\text{I}$  (I=Iodine)?  
(a) 53                      (c) 127                      (e) 184  
(b) 78                      (d) 131
- Which of the following is the correct formula for potassium nitrate?  
(a)  $\text{KNO}_3$               (c)  $\text{KNO}_2$               (e)  $\text{KNO}_4$   
(b)  $\text{K}_3\text{N}$                       (d)  $\text{KCN}$
- The sodium atom typically loses 1 electron to become:  
(a) A larger sodium anion              (c) A larger sodium cation  
(b) A smaller sodium anion              (d) A smaller sodium cation
- How many 250-mg aspirin tablets can be made from 25.0 kg of aspirin?  
(a) 1000                      (b) 10,000                      (c) 100,000  
(d) 1,000,000              (e) 10,000,000
- Which one of the following lists gives the correct symbols for the elements phosphorus, potassium, silver, chlorine, and sulfur?  
(a) K, Ag, Po, Cl, S              (b) P, Po, Ag, Cl, S              (c) Ph, K, Ag, S, Cl  
(d) P, K, Ag, Cl, S              (e) Ph, Po, Ag, Cl, S

8. What is the formula for the binary compound formed between  $\text{Al}^{3+}$  and  $\text{Se}^{2-}$  ions?  
(a)  $\text{AlSe}$             (b)  $\text{Al}_2\text{Se}$             (c)  $\text{Al}_2\text{Se}_3$             (d)  $\text{Al}_3\text{Se}_2$   
(e)  $\text{AlSe}_3$
9. The formulas of the nitrite, phosphate, and nitrate ions are represented, respectively, as  
(a)  $\text{NO}_2^-$ ,  $\text{PO}_4^{3-}$ ,  $\text{NO}_3^-$ .            (b)  $\text{N}^{3-}$ ,  $\text{PO}_3^{3-}$ ,  $\text{NO}_3^-$ .  
(c)  $\text{NO}^-$ ,  $\text{P}^{5-}$ ,  $\text{NO}_3^-$ .            (d)  $\text{NO}_2^-$ ,  $\text{P}^{3-}$ ,  $\text{NO}_3^-$ .  
(e)  $\text{NO}_3^-$ ,  $\text{PO}_2^-$ ,  $\text{N}^{3-}$ .
10. How many electrons does a sulfide ion ( $\text{S}^{2-}$ ) have?  
(a) 6            (b) 8            (c) 18            (d) 20            (e) 16
11. What is the total number of oxygen atoms in 2.60 g of  $\text{CaCO}_3$  (MM = 100.0 g/mol)  
(a)  $4.70 \times 10^{22}$ .            (b)  $6.26 \times 10^{22}$ .            (c)  $7.83 \times 10^{22}$ .  
(d)  $3.02 \times 10^{23}$ .            (e)  $2.59 \times 10^{23}$ .
12. How many moles of iron atoms are contained in 4.74 g of iron?  
(Fe = 55.845 g/mol)  
(a) 0.182 mol    (b) 0.132 mol            (c) 0.0846 mol  
(b) 0.0632 mol    (e) 265 mol
13. Which is the largest distance?  
a) 10 dm            b) 10 cm            c) 10 nm  
d) 10 pm            e) 10 mm
14. Express the number 0.000938 in scientific notation.  
a)  $938 \times 10^{-6}$             b)  $9.38 \times 10^2$             c)  $9.38 \times 10^4$   
d)  $9.38 \times 10^{-4}$             e)  $0.938 \times 10^{-3}$
15. How many electrons does the ion  ${}^{59}_{27}\text{Co}^{2+}$  have?  
a) 25            b) 27            c) 29  
d) 32            e) 59
16. Choose the group containing the most reactive metals on the periodic table.  
a) Group 1A            b) Group 3A            c) Group 5A  
d) Group 7A            e) Group 8A

17. The correct name for FeO is  
a) iron oxide.                      b) iron(II) oxide.                      c) iron(III) oxide.  
d) iron monoxide.                      e) iron(I) oxide.
18. The formula for aluminum sulfate is  
a)  $\text{Al}_2(\text{SO}_3)_3$ .                      b)  $\text{Al}_2(\text{SO}_4)_3$ .                      c)  $\text{Al}_3(\text{SO}_4)_2$ .  
d)  $\text{Al}_2\text{S}_3$ .                      e)  $\text{Al}_3\text{S}_2$ .
19. Diamond and graphite are both \_\_\_\_\_ of the same element \_\_\_\_\_?  
a) Isotopes, carbon                      d) Isotopes, Nitrogen  
b) Allotropes, carbon                      e) Compounds, carbon  
c) Allotropes, gold
20. Bromine has two naturally occurring isotopes,  $^{79}\text{Br}$  (50.7% abundance) and  $^{81}\text{Br}$  (49.3% abundance). Which expression best describes how the atomic mass of bromine is calculated?  
a)  $(50.7 \times 79) + (49.3 \times 81)$   
b)  $(79 + 81) / 2$   
c)  $(0.507 \times 79) + (0.493 \times 81)$   
d)  $(0.507 \times 81) + (0.493 \times 79)$   
e)  $(0.79 \times 50.7) + (0.81 \times 49.3)$
-

# PERIODIC TABLE OF THE ELEMENTS

<http://www.ktf-split.hr/periodni/en/>

PERIOD	GROUP 1 IA		GROUP NUMBERS IUPAC RECOMMENDATION (1985)										GROUP NUMBERS CHEMICAL ABSTRACT SERVICE (1986)						GROUP 18 VIIIA	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
1	1 1.0079 <b>H</b> HYDROGEN																	2 4.0026 <b>He</b> HELIUM		
2	3 6.941 <b>Li</b> LITHIUM	4 9.0122 <b>Be</b> BERYLLIUM											5 10.811 <b>B</b> BORON	6 12.011 <b>C</b> CARBON	7 14.007 <b>N</b> NITROGEN	8 15.999 <b>O</b> OXYGEN	9 18.998 <b>F</b> FLUORINE	10 20.180 <b>Ne</b> NEON		
3	11 22.990 <b>Na</b> SODIUM	12 24.305 <b>Mg</b> MAGNESIUM											13 26.982 <b>Al</b> ALUMINIUM	14 28.086 <b>Si</b> SILICON	15 30.974 <b>P</b> PHOSPHORUS	16 32.065 <b>S</b> SULPHUR	17 35.453 <b>Cl</b> CHLORINE	18 39.948 <b>Ar</b> ARGON		
4	19 39.098 <b>K</b> POTASSIUM	20 40.078 <b>Ca</b> CALCIUM	21 44.956 <b>Sc</b> SCANDIUM	22 47.867 <b>Ti</b> TITANIUM	23 50.942 <b>V</b> VANADIUM	24 51.996 <b>Cr</b> CHROMIUM	25 54.938 <b>Mn</b> MANGANESE	26 55.845 <b>Fe</b> IRON	27 58.933 <b>Co</b> COBALT	28 58.693 <b>Ni</b> NICKEL	29 63.546 <b>Cu</b> COPPER	30 65.39 <b>Zn</b> ZINC	31 69.723 <b>Ga</b> GALLIUM	32 72.64 <b>Ge</b> GERMANIUM	33 74.922 <b>As</b> ARSENIC	34 78.96 <b>Se</b> SELENIUM	35 79.904 <b>Br</b> BROMINE	36 83.80 <b>Kr</b> KRYPTON		
5	37 85.468 <b>Rb</b> RUBIDIUM	38 87.62 <b>Sr</b> STRONTIUM	39 88.906 <b>Y</b> YTTRIUM	40 91.224 <b>Zr</b> ZIRCONIUM	41 92.906 <b>Nb</b> NIOBIUM	42 95.94 <b>Mo</b> MOLYBDENUM	43 (98) <b>Tc</b> TECHNETIUM	44 101.07 <b>Ru</b> RUTHENIUM	45 102.91 <b>Rh</b> RHODIUM	46 106.42 <b>Pd</b> PALLADIUM	47 107.87 <b>Ag</b> SILVER	48 112.41 <b>Cd</b> CADMIUM	49 114.82 <b>In</b> INDIUM	50 118.71 <b>Sn</b> TIN	51 121.76 <b>Sb</b> ANTIMONY	52 127.60 <b>Te</b> TELLURIUM	53 126.90 <b>I</b> IODINE	54 131.29 <b>Xe</b> XENON		
6	55 132.91 <b>Cs</b> CAESIUM	56 137.33 <b>Ba</b> BARIUM	57-71 <b>La-Lu</b> Lanthanide	72 178.49 <b>Hf</b> HAFNIUM	73 180.95 <b>Ta</b> TANTALUM	74 183.84 <b>W</b> TUNGSTEN	75 186.21 <b>Re</b> RHENIUM	76 190.23 <b>Os</b> OSMIUM	77 192.22 <b>Ir</b> IRIDIUM	78 195.08 <b>Pt</b> PLATINUM	79 196.97 <b>Au</b> GOLD	80 200.59 <b>Hg</b> MERCURY	81 204.38 <b>Tl</b> THALLIUM	82 207.2 <b>Pb</b> LEAD	83 208.98 <b>Bi</b> BISMUTH	84 (209) <b>Po</b> POLONIUM	85 (210) <b>At</b> ASTATINE	86 (222) <b>Rn</b> RADON		
7	87 (223) <b>Fr</b> FRANCIUM	88 (226) <b>Ra</b> RADIUM	89-103 <b>Ac-Lr</b> Actinide	104 (261) <b>Rf</b> RUTHERFORDIUM	105 (262) <b>Db</b> DUBNIUM	106 (266) <b>Sg</b> SEABORGIUM	107 (264) <b>Bh</b> BOHRIUM	108 (277) <b>Hs</b> HASSIUM	109 (268) <b>Mt</b> MEITNERIUM	110 (281) <b>Uun</b> UNUNNIUM	111 (272) <b>Uuu</b> UNUNUNIUM	112 (285) <b>Uub</b> UNUNBIUM		114 (289) <b>Uuq</b> UNUNQUADIUM						

## LANTHANIDE

Copyright © 1998-2002 EniG. (eni@ktf-split.hr)

(1) Pure Appl. Chem., 73, No. 4, 667-683 (2001)

Relative atomic mass is shown with five significant figures. For elements with no stable nuclides, the value enclosed in brackets indicates the mass number of the longest-lived isotope of the element.

However three such elements (Th, Pa, and U) do have a characteristic terrestrial isotopic composition, and for these an atomic weight is tabulated.

57 138.91 <b>La</b> LANTHANUM	58 140.12 <b>Ce</b> CERIUM	59 140.91 <b>Pr</b> PRASEODYMIUM	60 144.24 <b>Nd</b> NEODYMIUM	61 (145) <b>Pm</b> PROMETHIUM	62 150.36 <b>Sm</b> SAMARIUM	63 151.96 <b>Eu</b> EUROPIUM	64 157.25 <b>Gd</b> GADOLINIUM	65 158.93 <b>Tb</b> TERBIUM	66 162.50 <b>Dy</b> DYSPROSIUM	67 164.93 <b>Ho</b> HOLMIUM	68 167.26 <b>Er</b> ERBIUM	69 168.93 <b>Tm</b> THULIUM	70 173.04 <b>Yb</b> YTTERBIUM	71 174.97 <b>Lu</b> LUTETIUM
-------------------------------------	----------------------------------	--	-------------------------------------	-------------------------------------	------------------------------------	------------------------------------	--------------------------------------	-----------------------------------	--------------------------------------	-----------------------------------	----------------------------------	-----------------------------------	-------------------------------------	------------------------------------

## ACTINIDE

89 (227) <b>Ac</b> ACTINIUM	90 232.04 <b>Th</b> THORIUM	91 231.04 <b>Pa</b> PROTACTINIUM	92 238.03 <b>U</b> URANIUM	93 (237) <b>Np</b> NEPTUNIUM	94 (244) <b>Pu</b> PLUTONIUM	95 (243) <b>Am</b> AMERICIUM	96 (247) <b>Cm</b> CURIUM	97 (247) <b>Bk</b> BERKELIUM	98 (251) <b>Cf</b> CALIFORNIUM	99 (252) <b>Es</b> EINSTEINIUM	100 (257) <b>Fm</b> FERMIUM	101 (258) <b>Md</b> MENDELEVIUM	102 (259) <b>No</b> NOBELIUM	103 (262) <b>Lr</b> LAWRENCIUM
-----------------------------------	-----------------------------------	--	----------------------------------	------------------------------------	------------------------------------	------------------------------------	---------------------------------	------------------------------------	--------------------------------------	--------------------------------------	-----------------------------------	---------------------------------------	------------------------------------	--------------------------------------

Editor: Aditya Vardhan (adivar@netlinx.com)