ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY
SPECIAL SCHOOL

CHEMISTRY GRADE 9 GENERAL WORKSHEET

UNIT ONE, TWO, THREE

2024/2016

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I. CHOOSE THE BEST ANSWER FROM THE GIVEN ALTERNATIVES

1. Two students performed the same experiment separately and each one of them recorded two readings of mass which are given below. Correct reading of mass is 3.0 g. On the basis of given data, mark the correct option out of the following statements.

Student	Reading	
	1	2
A	3.01	2.99
B	3.05	2.95

   a) Results of both the students are neither accurate nor precise.
   b) Results of student A are both precise and accurate.
   c) Results of student B are neither precise nor accurate.
   d) Results of student B are both precise and accurate.

2. Anionis formed when an atom

   A. Loses electrons
   B. Loses protons
   C. Both A and B
   D. Gains electrons

3. A measured temperature on Fahrenheit scale is 200 °F. What will this reading be on Celsius scale?

   a) 40 °C
   b) 94 °C
   c) 93.3 °C
   d) 30 °C

4. Which of the following is / are correct statement according to modern atomic theory?

   A. Atoms of argon and calcium have same atomic weight.
   B. Atom is the smallest unit of matter which takes part into chemical reaction.
   C. Atoms of different elements are different in all respects.
   D. Matter consists of small indivisible particles called atoms

5. In the final answer of the expression (29.2 - 20.2)(1.79 x 10 5)/ 1.37 ´ the number of significant figures is

   A. 1 B. 3 C. 2 D. 4

6. Size of atom comparable to nucleus

   A. More
   B. Less
   C. Equal
   D. Either more (or) Less

7. Which of the following is true according to Dalton's atomic theory?

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A. Matter consists of small indivisible particles called atoms.
B. Atoms of same element are like in all respects.
C. Atoms combine in small whole numbers to form compound atoms (molecules).
D. Atom is the smallest unit of matter which takes part in a chemical reaction.

8. Given the numbers : 161 cm, 0.161 cm, 0.0161 cm. The number of significant figures for the three numbers are

a) 3, 4 and 5 respectively
b) 3, 3 and 4 respectively
c) 3, 3 and 3 respectively
d) 3, 4 and 4 respectively

9. In Bohr's atomic model orbits are represented by

A. K, L, M, N
B. 1, 2, 3, 4
C. A, B, C, D
D. Both A and B

10. One fermi is

A. 10^{-15} cm
B. 10^{-13} cm
C. 10^{-10} cm
D. 10^{-12} cm

11. As the number of protons is equal to number of electrons in an atom, there for it is:

A. Electrically positive
B. Electrically negative
C. Electrically neutral
D. Atomic mas

12. The correctly reported answer of addition of 29.4406, 3.2 and 2.25 will have significant figures

A. 3 B. 4 C. 2 D.

13. On dividing 0.25 by 22.1176 the actual answer is 0.011303. The correctly reported answer will be

A. 0.011
B. 0.01
C. 0.0113
D. 0.013 3.

14. The spontaneous emission of active radiations by certain elements like uranium is called:

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A. Atomic activity
C. Protan activity
B. Radio activity
D. None

15. In which of the following number all zeros are significant?
A. 0.0005
C. 50.000
B. 0.0500
D. 0.0050

16. Isobars differ in
A. Nucleus
C. tomic number
B. Mass number
D. Both A and C

17. Radio activity was discovered for the first time is:
A. Henry becquerel
C. Rutherford
B. Query
D. Rontgen

18. Which of the following data gives the most precise measurement ?
A. 5g B. 5.0g C. 5.00g D. 5.000g

19. The mass of electron is:
A. 9.11×10–31Kg
C. 6.67×10–27Kg.
B. –1.602×10–19C
D. None

20. A measuring cylinder has a precision of + 0.01ml. A liquid sample that has a volume of 10ml is measured by the measuring cylinder. How many significant figures should be reported for measurement?
A. 1 B. 2 C. 3 D. 4

21. How is the passing of alpha particles through gold foil is detected in alpha-rays scattering experiement?
A. Zinc screen
C. Silver screen
B. Zinc sulphide screen
D. Silver sulphide

22. The term 'atom' was given by:
A. Democritus
C. William Crookes
B. John Dalton
D. Maharishi Kanada

23. Rutherford's experiment on scattering of alpha particles showed for the first time that atom has:
A. Nucleus B. Electrons C. Protons CD Neutrons

24. Which part of a scientific report discusses the accuracy of measurements taken?
A. Aim. B. Theory. C. Methods. D. Results

25. Choose the correct statements given below?

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A. Anode rays are also called 'Canal rays'
B. Anode rays are having '+ve' charge
C. Anode rays are produced γ -rays
D. Mass of anode rays many times to that of an electrons

26. A grade 11 physics teacher ordered four of his students to measure the length of a class room. He provided them the following length measuring instruments. The instruments are meter rule with millimeter division, vernier calipers, micrometer screw gauge and meter tape with centimeter scale, but its zero reading is not visible. Which one of these instruments is appropriate for the task?

A. Meter rule. C. Vernier calipers.. B. Meter tape. D. Micrometer screw gauge.

27. What can be concluded when the number of significant figures increases? (UEE: 2010)

A. True reading increases. C. Precision increases. B. Uncertainty increases. D. Accuracy increases.

28. The smallest unit of any element is called:

A. Molecule
B. Compound
C. Atom
D. None

29. If a precision of surveyor measured a distance of 500 meters (between two points in a village) using a meter that has centimeter division on it, then what is the measurement result?

A. 500m B. 500.0m C. 500.00. D. 500.000m

30. Atomic theory was proposed by:

A. William crookes
B. John Dalton
C. J.J. Thomson
D. Goldstein

31. What is the scientific notation of 4,610,000 with 2 significant figures?

A. $5x10^6$ B. $4.61x10^6$ C. $4.6x10^6$ D. $4.610x10^6$

32. Alpha particles deflected when they approach the nucleus very closely, because:

A. Nucleus containing negatively charged particles.
B. Nucleus containing positively charged particles
C. Nucleus containing neutral charged particles
D. All the above

33. A gas cylinder having a volume of 10.5L contains 36.8g of gas. What is the density of the gas in kg/m^3?

A. 3.50 B. 0.28 C. 2.8 D. 35

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34. Which of the following properties of a substance does NOT represent an intensive physical property?

A. Color B. Melting point C. Conductivity D. Area

35. Rutherford's atomic model is also called

A. Nuclear model
B. Solar model
C. Planetary model
D. Watermelon model

36. Which one of the following is NOT allowed in the chemistry laboratory?

A. Knowing the hazards of the material being used
B. Wearing any type of cloth and shoe
C. Reading the labels on the reagent bottles carefully
D. Tie back loose hair

37. Rutherford's model is related to explain:

A. Discovery of nucleus
B. Spectrum of hydrogenic species
C. Planetary motion of electrons around nucleus
D. All of these

38. Which of the following is NOT a basic SI unit?

A. Candela B. Gram C. Mole D. Second

39. Identify the correct statements regarding Rutherford's atomic model

A. It explained the hallowness of the atom.
B. Nucleus consists of positive charge i.e., Protons.
C. Atom is experiencing two forces by which it is stable
D. None

40. What is the number of significant figures in 0.0030050?

A. 4 B. 5 C. 7 D. 8

41. Rutherford's scattering experiements led to the discovery of:

A. Nucleus
B. Presence of neutrons in the nucleus
C. Revolving nature of electrons around the nucleus
D. Both A and B

42. The first step of the scientific method involves

A. Forming a hypothesis.
B. Making observations.
C. Performing an experiment.
D. Predicting the result of an experiment.

43. In which one of the following numbers are all of the zeros significant?

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A. 100.090090 B. 0.143290 C. 0.1000 D. 00.0030020

44. Which of the following represents a tentative explanation of a certain scientific law?

A. Hypothesis B. Observation C. Experimentation D. Theory

45. In order to advance to the level of a theory, a hypothesis should

A. Be obviously accepted by most people.
B. Be a fully functional experiment.
C. Be repeatedly confirmed by experimentation.
D. Report the past experience.

46. In Rutherfor'd scattering experiment, which of the following does not happen!

A. Most of the α -rays pass through without deflecting.
B. A few α -particles pass through the nucleus.
C. A few α -particles are deflected back.
D. α -particles going near the nucleus are slight by deflected.

47. Deflection back of a few particles on hitting thin foil of gold shows that

A. Nucleus is heavy
B. Nucleus is small
C. Both A and B
D. Electrons create hindrance in the movement of α -particles.

48. Classify each of the following changes as physical or chemical:

A. condensation of steam
B. burning of gasoline
C. souring of milk
D. dissolving of sugar in water
E. melting of gold

49. Explain the difference between extensive properties and intensive properties.

50. Specific charge is

A. Charge to mass ratio
B. Mass to charge ratio
C. Velocity to mass ratio
D. Mass to velocity ratio

51. Identify the following properties as either extensive or intensive. (a) volume (b) temperature (c) humidity (d) heat (e) boiling point

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52. Match the prefixes present in column I with their multiples in column II and mark the appropriate choice.

Column I		Column II	
(A)	Pico	(1)	10^{9}
(B)	Femto	(I	10^{-3}
(C)	mill!	(iii	10^{-12}
(D)	Giga	(iv	10^{-15}

A. A -> (i), (B) -> (ii). (C) -> (iii), (D) -+(iv)

B. A —> ii, B -> i, C —> iv, D —>iii

C. A -» iv, B -> iii, C -> i» D -» ii

D. A -> iii, B -> iv, C -> ii, D -> i

53. Mark the conversion factor which is not correct.

A. 1 atm = 1.01325 x 10^{5} Pa

B. 1 metre = 39.37 inches

C. 1 litre = 10^{-3} m^{3}

D. 1 inch = 3.33 cm

54. Mark the rule which is not correctly stated about the determination of significant figures.

A. Zeros preceding to first non-zero digit are not significant.

B. Zeros between two non-zero digits are not significant.

C. Zeros at the end or right of the number are significant if they are on the right side of decimal point.

D. All non-zero digits are significant.

55. Bohr's orbits are called stationary states because:

A. Electrons in them are stationary.

B. Their orbits have fixed radii.

C. The electrons in them have fixed energy.

D. The protons remain in the nuclei and are stationary.

56. Which of the following rules regarding the significant figures and calculations involving them is not correct?

A. The result of an addition or subtraction is reported to the same number of decimal places as present in number with least decimal places

B. Result of multiplication or division should have same number of significant figures as present in most precise figure

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C. The result of multiplication or division should be rounded off to same number of significant figures as present in least precise figure.

The non-significant figures in the measurement are rounded off.

57. Electrons present in circular stationary orbits within an atom will:

A. Remain stationary without motion.

B. Absorbs energy during revolution around the nucleus.

C. Radiates energy during revolution around the nucleus.

D. Always associated with a fixed amount of energy during its revolution in the orbit.

58. The result of the operation 2.5 x 1.25 should be which of the following on the basis of significant figures?

A. 3.125 C. 3.1

B. 3.13 D. 31.25

59. How many significant figures are present in 0.010100×10^3?

A. 7 C. 3

B. 5 D. 10

60. What will be the answer in appropriate significant figures as a result of addition of 3.0223 and 5.041?

(a) 80.633 (b) B 0.0633

(c) 8.063 (d 806.33

61. Bohr's model of an atom is based upon:

A. Heisenberg's uncertainty principle.

B. de Broglie concept of dual character of matter.

C. Schrodinger wave equation.

D. Planck's quantum theory.

62. What should be the volume of the milk (in m^3) which measures 5 L?

A. $5 \times 10^{-3}\ m^3$ C. $5 \times 10000\ m^3$

B. $5x10^3m^3$ D. $5x10^6m^3$

63. In n=3, the corresponding shell is:

A. K B. L C. M D. N

64. How many seconds are there in 3 days?

A. 259200 s C. 24800 s

B. 172800 s D. 72000 s

65. Which of the following shell has least energy

A. K **C.** M

B. L **D.** N

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66. Express each of the following numbers in scientific notation with correct significant figures:

A. 711.0
B. 0.239
C. 90743
D. 134.2
E. 0.05499
F. 10000.0
G. 0.000000738592

67. Which of the following are merits of Bohr's atomic model?

A. It could explain the stability of an atom.
B. It helped in calculating energy of an electron in a particular orbit of hydrogen.
C. Both A and B
D. None of the above.

68. Express each of the following numbers in exponential notation with correct significant figures:

A. 704
B. 0.03344
C. 547.9
D. 22086
E. 1000.00
F. 0.0000000651
G. 0.007157

69. Mass of neutron is

A. equal to that of electron
B. equal to that of proton
C. less than that of proton
D. slightly more than that of proton

70. Maximum number of electrons accomidate in n = 4 orbit is

A. 12
B. 14
C. 32
D. 16

71. How many significant figures are contained in each of the following measurements?

A. 38.7 g
B. 2×10^{18} m
C. 3,486,002 kg
D. 9.74150×10^{-4} J
E. 0.0613 cm3

72. The valence electrons of an element are responsible for

A. physical properties of an element

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B. chemical properties of an element
C. both the properties
D. none of these

73. Calculate neutrons in $^{235}_{92}U$ is

A. 143
B. 132
C. 140
D. 120

74. Round off each of the following numbers to two significant figures:

A. 0.436
B. 9.000
C. 27.2
D. 135
E. 1.497×10^{-3}
F. 0.445

75. In Hydrogen nucleus which has neutrons are zero

A. Protinium
B. Deutrium
C. Tritium
D. Both A and B

76. The number of significant figures for the three numbers 161 cm, 0.161 cm, 0.0161 cm are

A. 3,4 and 5 respectively
B. 3,4 and 4 respectively
C. 3,3 and 4 respectively
D. 3,3 and 3 respectively

77. The specific charge for cathode rays is

A. Constant
B. Variable
C. Dependent upon the material of the cathode
D. Dependent upon the nature of gas in the discharge tube

78. Arrange the numbers in increasing no. of significant figures. 0.002600, 2.6000, 2.6, 0.260

A. 2.6 < 0.260 < 0.002600 < 2.6000
B. 2.6000 < 2.6 < 0.002600 < 0.260
C. 0.260 < 2.6 < 0.002600 < 2.6000
D. 0.002600 < 0.260 < 2.6 < 2.6000

79. If the density of a solution is 3.12 g m L^{-1}, the mass of 1.5 mL solution in significant figures is _____

A. 4.7g

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B. $4680 \times 10^{-3} g$

C. 4.680g

D. 46.80g

80. Perform the following calculations and report each answer with the correct number of significant figures.

A. 628×342

B. $(5.63 \times 10^{2}) \times (7.4 \times 10^{3})$

C. 28.0 /13.483

D. 8119×0.000023

E. 14.98 + 27,340 + 84.7593

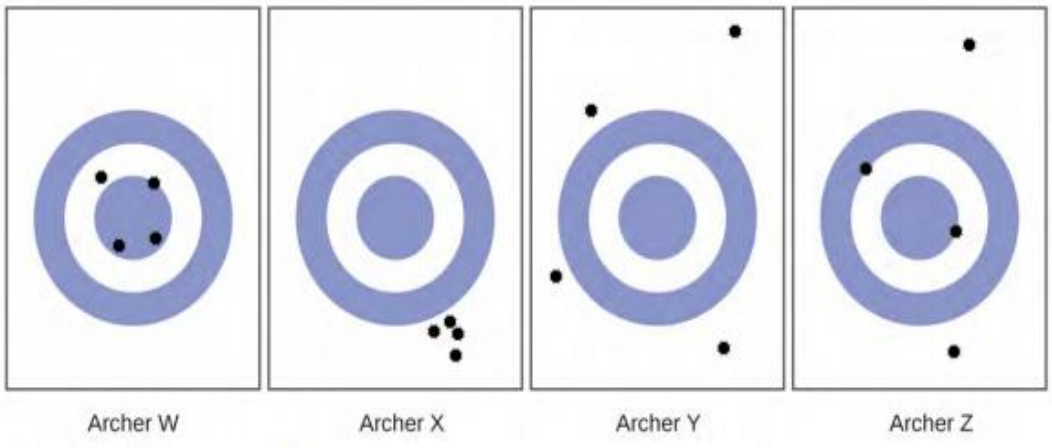
F. 42.7 + 0.259

81. Consider the results of the archery contest shown in this figure BELLOW.

A. Which archer is most precise?

B. Which archer is most accurate?

C. Who is both least precise and least accurate



82. A parasite that causes trichinosis is killed when meat is cooked to 66°C. Assume you have only a Fahrenheit thermometer. Determine the minimum Fahrenheit temperature to which the meat should be heated when it is being cooked.

83. Rutherford's α-particle scattering experiment showed that

i. electrons have negative charge

ii. the mass and positive charge of the atom is concentrated in the nucleus

iii. neutron exists in the nucleus

iv. most of the space in atom is empty Which of the above statements are correct?

A. i and iii **B.** ii and iv **C.** i and iv **C.** iii and iv

84. A laboratory instructor has given a sample of ethanol to four students **A**, **B**, **C** and **D**. Each student was asked to measure the volume of a sample and recorded his/ her results. The true value is 8.72 ml. Their results for three trials are:

Trials	A	B	C	D
1	8.72ml	8.50ml	8.50ml	8.41ml
2	8.74ml	8.77ml	8.48ml	8.72ml
3	8.70ml	8.83ml	8.51ml	8.55ml

Which set of data is the most accurate? A. A B. B C. C D. D

85. If the true value for an experimental result is 6.23 and the results reported by three students X, Y and Z are :

X : 6.18 and 6.28,

Y : 6.20 and 6.023

Z : 6.22 and 6.24

Which of the following option is correct :

A. X precise, Y accurate, Z precise and accurate.

B. X precise and accurate, Y not precise, Z precise

C. Both X & Z precise & accurate, Y not precise.

D. Both X & Y neither precise nor accurate, Z both precise and accurate.

86. The ion of an element has 3 positive charges. Mass number of the atom is 27 and the number of neutrons is 14. What is the number of electrons in the ion?

A. 13 **C.** 14

B. 10 **D.** 16

87. Ethanol is used in alcoholic beverages and has a density of 0.789 g/mL. What volume of ethanol (in litres) would have a mass of 500 g?

88. Which of the following statement is always correct?

A. An atom has equal number of electrons and protons.

B. An atom has equal number of electrons and neutrons.

C. An atom has equal number of protons and neutrons.

D. An atom has equal number of electrons, protons and neutrons.

89. Calculate the density of a rectangular block of metal whose length is 8.335 cm, width is 1.02 cm, height is 0.982 cm and mass is 62.3538 g.

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90. Which of the following are intensive properties of a sample of a substance?

A. freezing point;
B. heat content;
C. temperature
D. Mass

91. What is meant by an absolute temperature scale?

92. In the Thomson's model of atom, which of the following statments are correct?

i. the mass of the atom is assumed to be uniformaly distributed over the atom
ii. the positive charge is assumed to be uniformaly distributed over the atom
iii. the electrons are uniformaly distributed in the positively charged sphere
iv. the electrons attract each other to stabilise the atom

A. i, ii and iii B. i and iii C. i and iv D. i, iii and iv

93. Which one(s) of the following numbers is (are) written in scientific notation?

A. 0.131×10^8
B. 73×10^3
C. 2.01×10^4
D. 1.66×10^0
E. $1.001 \times 10^{2.5}$

94. A piece of silver metal weighing 194.3 g is placed in a graduated cylinder containing 242.0 mL of water. The volume of water now reads 260.5 mL. Calculate the density of the metal.

95. Explain the difference between mass and weight. Why is your weight on the Moon one-sixth that on Earth?

96. Dalton's atomic theory successfully explained

i. Law of conservation of mass
ii. Law of constant composition
iii. Law of radioactivity
iv. Law of multiple proportion

A. i, ii and iii B. i, iii and iv C. ii, iii and iv D. i, ii and iv

97. Salt and ice are stirred together to give a mixture to freeze ice cream. The temperature of the mixture is -21.1C. What is this temperature in degrees Fahrenheit?

98. Which of the following are true for an element?

i. Atomic number = number of protons + number of electrons
ii. Mass number = number of protons + number of neutrons
iii. Atomic mass = number of protons = number of neutrons

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iv. Atomic number = number of protons = number of electrons

A. i and ii B. I and iii C. ii and iii D. ii and iv

99. Write the following measurements, without scientific notation, using the appropriate SI prefix.

A. 5.89×10^{-12} s
B. 0.2010 m
C. 2.560×10^{-9} g
D. 6.05×10^{3} m

100. Using scientific notation, convert:

A. . 6.15 ps to s
B. 3.781 m to m
C. 1.546 Å to m
D. 9.7 mg to g

101. Which of the following particles explains the existence of isotopes

A. Electron
B. Neutron
C. Photon
D. Proton

102. No. of neutrons equal to

A. A-Z
B. Z-A
C. A+ Z
D. Both B and C

103. The Significance of electronic configuration is

A. Count no.of P^+ in atom
B. Explains reactivity of atom
C. Both A and B
D. Arrangement of electrons in various shells

104. Which of the following correctly represent the electronic distribution in the Mg atom?

A. 3, 8, 1
B. 2, 8, 2
C. 1, 8, 3
D. 8, 2, 2

105. The number of electrons in an element X is 15 and the number of neutrons is 16. Which of the following is the correct representation of the element?

A. $^{31}_{15}X$
B. $^{31}_{16}X$
C. $^{16}_{15}X$ D. $^{15}_{16}X$

106. Convert:

A. 68F to degrees Celsius
B. -23°F to degrees Celsius
C. 26°C to degrees Fahrenheit

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D. -70°C to degrees Fahrenheit

107. The circumference of the earth at the equator is 40,000 km. This value is precise to two significant figures. Write this in scientific notation to express correctly the number of significant figures.
108. The astronomical unit equals the mean distance between the earth and the sun. This distance is 150,000,000 km, which is precise to three significant figures. Express this in scientific notation to the correct number of significant figures.
109. An ice cube measures 3.50 cm on each edge and weighs 39.45 g.
    A. Calculate the density of ice.
    B. Calculate the mass of 400.4 mL of water in an ice cube

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