

OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA

SCHOOL OF SCIENCE

DEPARTMENT OF CHEMICAL SCIENCES

FIRST SEMESTER 2022/2023 SESSION. CONTINOUS ASSESSMENT TEST

CHM 111: GENERAL CHEMISTRY I

Time allowed: 25 minutes

Unit: 3

INSTRU

ANSWER ALL QUESTIONS

Name: .....

Matric number: .....

Department: Sc. B. Programme: Micro GY

1. Which of the following substances cannot be emitted by radioactive substances during their decay? (a) Protons (b) Neutrinos (c) Helium nuclei (d) Electrons
2. The electron emitted in  $\beta$  - radiation originates from where? (a) Inner orbits of atoms (b) Free electrons existing in nuclei (c) The decay of a neutron in nuclei (d) Photon escaping from the nucleus
3. Which of the following is not a homonuclear diatomic molecule? (a)  $H_2$  (b)  $N_2$  (c)  $O_2$  (d)  $HCl$
4. A ..... overlap doesn't result in the formation of a bond. (a) positive (b) negative (c) zero (d) rational
5. Which will be the unknown nucleus formed when  $^{22}Ne_{10}$  decays into two  $\alpha$ -particles and an unknown nucleus? (a) Fluorine (b) Carbon (c) Neon (d) Oxygen
6. What is the half-time of a radioactive sample (in minutes), if its mean life is 200 s? (a) 0.69 min (b) 2 min (c) 2.57 min (d) 2.31 min
7. Neutron was discovered by (a) Rutherford (b) Chadwick (c) J. J. Thomson (d) Niels Bohr
8. Calculate the pH of a solution containing hydrogen ion concentration  $[H^+] = 10^{-2}$   $mol\text{dm}^{-3}$   
(a) 2 (b) 3 (c) 4 (d) 5
9. A system is the part of universe ..... (a) not study (b) under study (c) over study (d) never studied
10. The unit  $J\text{mol}^{-1}\text{K}^{-1}$  is for ..... (a) molar heat capacity (b) specific heat capacity (c) conductivity (d) none of the above
11. A pair of electron acceptor is .....  
(a) Lewis base (b) Lewis acid (c) Bronsted Lowry base (d) Bronsted Lowry acid
12. The scientist who defined an acid as a proton donor while base is a proton acceptor is ..... (a) Arrhenius (b) Bronsted Lowry (c) Kelvin (d) Newton
13. Acid react with an alkali to form  
(a) base and water (b) salt and water (c) acid and water (d) sand and water
14. The principal, azimuthal and the magnetic spin quantum numbers are respectively related to (a) size, shape, and orientation (b) shape, size and orientation (c) size, orientation and shape (d) orientation, shape and size
15. As one moves along a given row in the periodic table ionization energy (a) remain the same (b) increase from left to right (c) first increase then decrease (d) decrease from left to right.
16. Specify in what group of the periodic table each of the following elements is found (i)  $[Ne]3s^1$  (ii)  $[Ne]3s^2 3p^3$  (a) 1A and VIA respectively (b) 1A and VA respectively (c) 1A and VIIA respectively (d) 11A and VIA respectively.
17. Given the electronic configuration of  $Z^{3+}$  as  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^1$ , the atomic number of Z is (a) 24 (b) 21 (c) 20 (d) 18

18. Which of the following is true about azimuthal quantum number? (a) it determines the number of orbital (b) it determines the spin of electron (c) it determines the structure of an atom (d) it determines the shape of an orbital.

19. The hybridization of  $\text{BCl}_3$  is ----- (a)  $\text{sp}^2$  (b)  $\text{sp}^3$  (c)  $\text{sp}^3\text{d}$  (d)  $\text{sp}^2\text{d}$

20. The trends or the recurring variation in element properties with increasing atomic number is called (a) stoichiometry (b) periodicity (c) Dalton (d) Electrolysis

Matric number: .....

Department: ..... Programme: .....

INSTRUCTION: SHADE / TICK THE CORRECT ANSWERS

|     | A. | B. | C. |
|-----|----|----|----|
| 1.  |    |    |    |
| 2.  |    |    |    |
| 3.  |    |    |    |
| 4.  |    |    |    |
| 5.  |    |    |    |
| 6.  |    |    |    |
| 7.  |    |    |    |
| 8.  |    |    |    |
| 9.  |    |    |    |
| 10. |    |    |    |

|     | A. | B. | C. | D. |
|-----|----|----|----|----|
| 11. |    |    |    |    |
| 12. |    |    |    |    |
| 13. |    |    |    |    |
| 14. |    |    |    |    |
| 15. |    |    |    |    |
| 16. |    |    |    |    |
| 17. |    |    |    |    |
| 18. |    |    |    |    |
| 19. |    |    |    |    |
| 20. |    |    |    |    |