



OLUSEGUN AGAGU UNIVERSITY OF SCIENCE AND TECHNOLOGY, OKITIPUPA
SCHOOL OF SCIENCE
DEPARTMENT OF CHEMICAL SCIENCES
SECOND SEMESTER C.T. TEST 2019/2020 SESSION
CHM 104: INTRODUCTORY PHYSICAL CHEMISTRY

Time allowed: 20 minutes

Unit: 2

INSTRUCTION: ANSWER ALL QUESTIONS

Name:

Matric number:

Department: Programme:

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1. A reaction in which heat energy is given out from the system to the surroundings is termed reaction. A) endothermic B) reversible C) exothermic D) irreversible
2. ΔH_c° means A) enthalpy change of formation B) standard enthalpy change of combustion C) enthalpy change of combustion D) enthalpy change of sublimation
3. The average energy absorbed to break 1 mole of a specified bond when all species involved are in the gaseous state is called A) enthalpy of decomposition B) bond enthalpy C) enthalpy of neutralization D) energy level diagram
4. energy is the energy required to break apart an ionic solid and convert its component atoms into gaseous ions. A) Kinetic B) Potential C) Lattice D) Heat
5. The energy required to remove an electron from a neutral atom or ion is Energy (A) sublimation B) dissociation C) ionization D) bond
6. All of the following are factors affecting the rate of a chemical reaction except Temperature (B) Catalyst (C) Volume (D) Surface area
7. The unit of rate constant for a second order reaction is determined as (A) $\text{mol}^{-2} \text{dm}^3 \text{s}^{-1}$ (B) $\text{mol}^{-1/2} \text{dm}^{3/2} \text{s}^{-1}$ (C) s^{-1} (D) $\text{mol}^{-1} \text{dm}^3 \text{s}^{-1}$
8. The power a particular concentration of a reactant is raised to in a reaction is called (A) Partial order (B) Overall order (C) Complex order (D) Reaction order
9. The process by which reactants attaches themselves to the catalyst is called * (A) Absorption (B) Adsorption (C) Chemisorption (D) Physisorption
10. The reaction between ethene and hydrogen in the presence of a nickel catalyst is an example of (A) Homogenous catalysis (B) Desorptive catalysis (C) Autocatalysis (D) Heterogenous Catalysis
11. How many moles of Na^+ ions are present in 40 cm³ of a 0.5M NaCl solution? (A) 0.01 (B) 0.02 (C) 0.03 (D) 0.04
12. What is the mole fraction of glucose $\text{C}_6\text{H}_{12}\text{O}_6$ in a 25wt.% solution of glucose in water? [$\text{C}_6\text{H}_{12}\text{O}_6 = 180$] (A) 0.0123 (B) 0.0223 (C) 0.0323 (D) 0.0423

13. What is the molality of ammonia in a solution prepared by adding 4.5g of NH_3 to 330g of H_2O ? [H:1, N=14] (A) 0.3M (B) 0.4M (C) 0.5M (D) 0.8M
14. A solution has a volume of 250cm^3 and contains 26.8g of calcium chloride, what is the molar concentration of the solution? [Ca=40.1, Cl=35.5] (A) 0.14M (B) 0.38M (C) 0.97M (D) 1.5M
15. What is the molecular formula of a compound with C 93.1%, H 6.9% and approx. Mol. Mass 116 (A) C_{10}H_8 (B) C_{10}H_9 (C) C_9H_{10} (D) $\text{C}_{10}\text{H}_{10}$
16. Give the name of the scientist who defined acid as: acid is a proton donor while base is a proton acceptor. (A) Arrhenius (B) Newton (C) Brønsted (D) Brønsted Lowry
17. Calculate the pH of a 0.00001 M acid solution (A) 5 (B) 3 (C) 4 (D) 2
18. Acids are substances that dissociate in water to produce H^+ ions and bases are substances that dissociate in water to produce OH^- ions. The definitions were proposed by (A) Arrhenius (B) Newton (C) Kelvin (D) Brønsted Lowry
19. $\text{HCl}(aq) + \text{H}_2\text{O}(l) \rightarrow \text{Cl}^-(aq) + \text{H}_3\text{O}^+(aq)$
In the above equation, what is the Brønsted base?
(A) H_2O (B) Cl (C) HCl (D) H_3O^+
20. $\text{H}_2\text{O}(l) + \text{H}_2\text{O}(l) \rightleftharpoons \text{H}_3\text{O}^+(aq) + \text{OH}^-(aq)$
In the above equation, what is the Conjugate base?
(A) HCl (B) H_2O (C) H_3O^+ (D) OH^-

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INSTRUCTION: TICK (✓) the correct answer with Pen or Pencil

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