



Republic of the Philippines  
**Department of Education**  
CARAGA REGION

**TABLE OF SPECIFICATION FOR THE DIAGNOSTIC TEST IN GENERAL CHEMISTRY 2  
SY 2022-2023**

MOST ESSENTIAL LEARNING COMPETENCIES	No. of days based on LC Codes	%	No. of Items	Lower-order Thinking Skills		Moderate-order Thinking Skills		Higher-order Thinking Skills	
				Rem	Und	App	Ana	Eval	Cre
				Item Placement					
Use the kinetic molecular model to explain properties of liquids and solids (STEM_GC11IMFIIIa-c-99)	1	1.56	1			1*			
Describe and differentiate the types of intermolecular forces (STEM_GC11IMFIIIa-c-100)	1	1.56	1		2**				
Describe the following properties of liquids, and explain the effect of intermolecular forces on these properties: surface tension, viscosity, vapor pressure, boiling point, and molar heat of vaporization (STEM_GC11IMFIIIa-c-102)	2	3.13	1	3**					
Explain the properties of water with its molecular structure and intermolecular forces (STEM_GC11IMFIIIa-c-103)	2	3.13	1	4**					
Describe the difference in structure of crystalline and amorphous solids (STEM_GC11IMFIIIa-c-104)	2	3.13	1	5**					
Interpret the phase diagram of water and carbon dioxide (STEM_GC11IMFIIIa-c-107)	1	1.56	1			6***			
Determine and explain the heating and cooling curve of a substance (STEM_GC11IMFIIIa-c-109)	1	1.56	1		7***				
Use different ways of expressing concentration of solutions: percent by mass, mole fraction, molarity, molality, percent by volume, percent by mass, ppm (STEM_GC11PPIId-f-111)	3	4.69	2		8*		9*		



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Perform stoichiometric calculations for reactions in solution (STEM_GC11PPIId-f-112)	3	4.69	2		10**		11**		
Describe the effect of concentration on the colligative properties of solutions (STEM_GC11PPIId-f-115)	2	3.13	1		12**				
Differentiate the colligative properties of nonelectrolyte solutions and of electrolyte solutions (STEM_GC11PPIId-f-116)	1	1.56	1				13**		
Calculate boiling point elevation and freezing point depression from the concentration of a solute in a solution (STEM_GC11PPIId-f-117)	2	3.13	2			14*		15**	
Calculate molar mass from colligative property data (STEM_GC11PPIId-f-118)	1	1.56	1			16*			
Describe laboratory procedures in determining concentration of solutions (STEM_GC11PPIId-f-119)	1	1.56	1	17**					
Explain the first law of thermodynamics (STEM_GC11TCIIg-i-124)	1	1.56	1			18**			
Explain enthalpy of a reaction (STEM_GC11TCIIg-i-125)	1	1.56	1				19***		
Calculate the change in enthalpy of a given reaction using Hess Law (STEM_GC11TCIIg-i-127)	1	1.56	1					20***	
Describe how various factors influence the rate of a reaction (STEM_GC11CKIII-j-130)	2	3.13	1		21***				
Differentiate zero, first-, and second-order reactions (STEM_GC11CKIII-j-132)	1	1.56	1				22**		
Explain reactions qualitatively in terms of molecular collisions (STEM_GC11CKIII-j-136)	2	3.13	1					23**	
Explain activation energy and how a catalyst affects the reaction rate (STEM_GC11CKIII-j-137)	2	3.13	2			24*		25**	
Cite and differentiate the types of catalysts (STEM_GC11CKIII-j-138)	1	1.56	1	26**					
Predict the spontaneity of a process based on entropy	1	1.56	1				27**		
Explain the second law of thermodynamics and its Significance	1	1.56	1					28***	

Use Gibbs' free energy to determine the direction of a reaction	2	3.13	1				29***		
Explain chemical equilibrium in terms of the reaction rates of the forward and the reverse reaction	2	3.13	1					30***	
Calculate equilibrium constant and the pressure or concentration of reactants or products in an equilibrium mixture	1	1.56	1				31***		
State the Le Chatelier's principle and apply it qualitatively to describe the effect of changes in pressure, concentration and temperature on a system equilibrium.	2	3.13	1					32***	
Define Bronsted acids and bases	1	1.56	1	33**					
Discuss the acid-base property of water	2	3.13	1		34**				
Calculate pH from the concentration of hydrogen ion or hydroxide ions in aqueous solutions	1	1.56	1					35***	
Describe how a buffer solution maintains its pH	2	3.13	1	36**					
Calculate the pH of a buffer solution using the Henderson Hasselbalch equation	2	3.13	2		37***	38***			
Define oxidation and reduction reactions.	4	6.25	2	39**	40**				
Balance redox reactions using the change in oxidation number method.	4	6.25	2			41**		42**	
Identify the reaction occurring in the different parts of the cell.	1	1.56	1	43**					
Define reduction occurring in the different parts of the cell.	1	1.56	1	44**					
Calculate the standard cell potential.	1	1.56	1			45**			
Relate the value of the cell potential to the feasibility of using the cell to generate an electric current.	1	1.56	1			46***			
Describe the electrochemistry involved in some common batteries: a. Leclanche dry cell b. Button batteries c. Fuel cells d. Lead storage battery	1	1.56	1		47**				
Apply electrochemical principles to explain corrosion.	1	1.56	1				48***		
Explain the electrode reactions during electrolysis.	1	1.56	1				49***		


Describe the reactions in some commercial electrolytic processes.	1	1.56	1					50**	
<b>Total</b>	<b>64</b>	<b>100%</b>	<b>50</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	

*Legend: \*Problem Solving; \*\*Information Literacy; \*\*\*Critical Thinking*

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