ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

Higher Secondary School Certificate
(HSSC)

Examination syllabus

Chemistry
XI

Based on Provincial revised curriculum (Sindh)

You can approach us:

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PREFACE

The Ziauddin University Examination Board (ZUEB) was established under **Sindh ACT XLI 2018**, with the primary objective of enhancing the quality of education in Sindh. ZUEB is responsible for administering examinations for the **Secondary School Certificate (SSC)** and **Higher Secondary School Certificate (HSSC)** in alignment with the most recent revisions to the **National Curriculum**, as outlined by the **Directorate of Curriculum Assessment and Research (DCAR), Sindh**. Through its ordinance, ZUEB is mandated to provide examination services for both English, Urdu, and Sindhi medium candidates from private schools across Sindh. This examination syllabus reflects ZUEB's dedication to achieving the educational goals set by the provincial authorities.

In collaboration with subject professors, ZUEB has developed a comprehensive syllabus for each subject. It is important to distinguish between the syllabus and the curriculum. The syllabus serves as a guide for both teachers and students, outlining the key areas of focus within the subject. It provides students with a clear understanding of what is expected of them in their studies and helps them prepare effectively for their exams.

This examination syllabus incorporates all cognitive outcomes derived from the **Provincial Curriculum Statement**, ensuring that assessments are both valid and reliable. While the focus is primarily on the cognitive domain, significant emphasis is placed on the application of knowledge and understanding.

The syllabus is made available to all stakeholders via the ZUEB website to assist affiliated schools in planning their teaching. It is crucial to note that the syllabus, rather than the prescribed textbook, forms the foundation of ZUEB examinations. Additionally, this syllabus supports the development of learning materials for both students and teachers. ZUEB remains committed to supporting students undertaking the SSC and HSSC courses by facilitating their learning outcomes through this detailed syllabus document.

To further assist in the learning process, ZUEB provides a dedicated **e-resource tab** on its website, offering both text-based and video content on various subjects. These 15-20 minute instructional videos, created around key subject concepts, allow students to learn at their own pace and convenience. The videos can be used as a reinforcement tool to revisit lessons already taught or as pre-lesson material. This initiative is an ongoing effort, and new videos will continue to be uploaded.

We encourage all students and educators to make the most of these resources for a more enriched and flexible learning experience.

Sincerely,

Shahbaz Nasim
Head – Measurement & Testing
Ziauddin University Examination Board

Reviewed by Beena Kohati-Bilal
Head - Curriculum & Assessment
Ziauddin University Examination Board
29.01.2025

Rationale For The Reviewed Provincial Curriculum

The process of revising the National Curriculum 2006 began in August 2004, when the newly elected government of Pakistan initiated education reforms across the country. These reforms included the introduction of a new National Education Policy, a National Education Census, and a revision of curricula (Ministry of Education, 2009).

In practice, the overhaul of the secondary school curriculum began in 2006, leading to a review of the scheme of studies for classes I to XII and the revision of curricula for 25 compulsory subjects.

The 18th Amendment to the Constitution of Pakistan, enacted in 2010, significantly altered the federal-provincial relationship by abolishing the "concurrent legislative list." This amendment granted provinces greater legislative and financial autonomy in sectors such as education and health. The most notable implication of the 18th Amendment for education was the transfer of responsibility for curriculum development, syllabus planning, policy formation, and educational standards to the provinces, marking a significant step forward for education.

In Sindh, the School Education Department tasked a Curriculum Review Team with revising the National Curriculum 2006 for all subjects. The goal was to create a curriculum better suited to the needs of students and teachers while aligning with the principles of the 18th Amendment. Subject-specific curriculum review committees were established to critically examine and align the curriculum's content, both contextually and textually, ensuring coherence across various subjects. The Bureau of Curriculum (BoC) played a crucial role in organizing workshops and meetings in Hyderabad to facilitate the completion of this task. The support of numerous educationists, researchers, and teachers was invaluable in successfully revising the curriculum.

The revised National Curriculum, along with the original version, is available on the DCAR website at http://dcar.gos.pk/BoC_Other_Pages/curriculum_dev.html for easy access.

The Ziauddin University Examination Board (ZUEB) SSC and HSSC syllabi are developed in accordance with the Sindh Revised Curriculum. To date, textbooks for various subjects have been developed based on the revised curriculum.

AIMS AND OBJECTIVES:

AIMS:

This two-year study of Chemistry aims to develop in all students:

- A scientific understanding of the physical world.
- Cognitive, affective, and psychomotor abilities appropriate to the acquisition and use of Chemical knowledge, understanding, attitude, and skills.
- An appreciation for the products and influences of science and technology, balanced by a Concern for their appropriate application.
- An understanding of the nature and limitations of scientific activity.
- An ability to apply the understanding of chemistry to relevant problems (including those From everyday real-life) and to approach those problems in rational ways.
- Respect for evidence, rationality and intellectual honesty.
- The capacities to express themselves coherently and logically, both orally and in writing, And to use appropriate modes of communication characteristic of scientific work.
- The ability to work effectively with others.

OBJECTIVES:

A statement of objectives relevant to each of the general aims is listed below. The sequence is in no particular order.

Understanding the physical world:

Students should understand the scientific concepts inherent in the theme for each chapter and be able to:

- state, exemplify, and interpret the concepts.
- use appropriately, fundamental terms and Classification related to the concepts.
- cite, explain or interpret, scientific evidence in support of the concepts.

Using appropriate cognitive, affective and psychomotor abilities:

Students should show ability to:

- Formulate questions that can be investigated by gathering first or second-hand data.
- Find relevant published background information.
- Formulate hypotheses and make predictions from them.
- Plan an investigation and carry out the planned procedure.
- Use appropriate and relevant motor skills in carrying out investigations.
- Observe phenomena and describe, measure and record these as data.
- Classify, collate and display data.
- Construct and/or interpret visual representations of phenomena and relationships (Diagrams, graphs, flowcharts, physical models).

- Analyze data and draw conclusions.
- Evaluate investigative procedures and the conclusions drawn from such investigations.

Understanding the nature and limitations of scientific activity:

For each facet of scientific activity selected for study, students should:

- Describe and exemplify it.
- Use appropriately any fundamental terms and classification related to it.
- Recognize that the problem-solving nature of science has limitations.
- Acknowledge that people engaged in science, a particularly human enterprise, have the Characteristics of people in general.

Appreciating influences of science and technology:

Students should:

- Recognize that the technology resulting from scientific activity influences the quality of Life and economic development through or by improvements in medical / health care, Nutrition and agricultural techniques.
- Explain that these influences may be the result of unforeseen consequences, rapid
- Exploitation or rapid cultural changes.
- Realize that advances in technology require judicious applications.

Respecting evidence, rationality and intellectual honesty:

Students should:

- Display respect for evidence, rationality and intellectual honesty given the number of emotive issues in the area of chemistry.

Showing capacities to communicate:

Students should:

- Comprehend the intention of a scientific communication, the relationship among its parts and its relationship to what they already know.
- Select and use the relevant parts of a communication.
- Translate information from communications in particular modes (spoken, written, tables,
- Graphs, flowcharts, diagrams) to other modes.
- Structure information using appropriate modes to communicate it.

Working with others:

Students should actively participate in group work and:

- Share the responsibility for achieving the group task.
- Show concern for the fullest possible involvement of each group.

ZIAUDDIN UNIVERSITY EXAMINATION BOARD

SLOs CATEGORIZATION

XI-Chemistry

Detailed Syllabus

UNIT	Students' learning outcomes:	Categorization		
	Students should be able to:	**K**	**U**	**A**
Unit 1	**Weightage 8 %** **Stoichiometry**			
	Describe mole and Avogadro's Number with examples (Understanding)		*	
	Determine Avogadro's Number and give relationship between mole and Avogadro'sNumber (Applying)			*
	Define rounding off data, Exponential notation and their practical applications insolving numerical. (Understanding)		*	
	Perform stoichiometric calculations with balanced equations using moles,representative particles, masses and volumes of gases (at STP) (Analyzing).			*
	Identify the limiting reactant in a reaction. (Analyzing)			*
	Knowing the limiting reactant in a reaction, calculate the maximum amount ofproduct(s) produced and the amount of any unreacted excess reactant. (Analyzing)			*
	Given information from which any two of the following may be determined, calculatetheoretical yield, actual yield, percentage yield. (Understanding)		*	
	Calculate theoretical yield and the percent yield by using the balanced equation, theamounts of reactants and the actual yield. (Applying)			*
Unit 2	**Weightage 8 %** **Atomic Structure**			
	Describe properties of sub atomic particles (Understanding)		*	
	Summarize Bohr's atomic theory (Applying)			*
	Use Bohr's model for calculating radii of orbits. (Understanding)		*	
	Use Bohr's atomic model for calculating energy, frequency and wave Number ofradiation emitted or absorbed by electron. (Applying)			*
	Describe spectrum and relate discrete line spectrum of hydrogen to energy levels ofelectrons in the hydrogen atom. (Applying)			*
	Explain production, properties, types and uses of X-rays. (Understanding)		*	
	Uses of nuclear radiation in health, agricultural etc. (Applying)			*
	Define photon as a unit of radiation energy. (Remembering)	*		
	Describe the concept of orbitals. (Understanding)		*	
	Explain the significance of quantized energies of electrons. (Applying)			*
	Distinguish among principal energy levels, energy sub levels, and		*	

	atomic orbitals.(Understanding)			
	Describe the general shapes of s, p, and d orbitals. (Understanding)		*	
	Describe the hydrogen atom using the Quantum Theory. (Understanding)		*	
	Use the Aufbau Principle, the Pauli Exclusion Principle, and Hund's Rule to writethe electronic configuration of the elements. (Applying)			*
	Describe the orbits of hydrogen atom in order of increasing energy. (Understanding)		*	
	Explain the sequence of filling of electrons in many electron atoms. (Applying)			*
	Describe radioactivity and uses of Nuclear radiation daily life. (Understanding)		*	
Unit3 **Weightage 10 % Theories of Covalent Bonding and Shapes of Molecules**				
	Describe the features of sigma and pi bonds. (Understanding)		*	
	Use VSEPR and VBT theories to describe the shapes of simple covalent molecules.(Applying)			*
	Describe the shapes of simple molecules using orbital hybridization. (Applying)			*
	Determine the shapes of some molecules from the number of bonded pairs and lonepairs of electrons around the central atom. (Analyzing)			*
	Define bond energies and explain how they can be used to compare bond strengthsof different chemical bonds. (Analyzing)			*
	Predict the molecular polarity from the shapes of molecules. (Applying)			*
	Describe how knowledge of molecular polarity can be used to explain some physicaland chemical properties of molecules. (Analyzing)			*
	Describe the change in bond lengths of hetero-nuclear molecules due to difference inElectronegativity values of bonded atoms. (Understanding)		*	
	Explain what is meant by the term ionic character of a covalent bond.(Understanding)		*	
Unit 4 **Weightage 11 % States of Matter I: Gases**				
	List the postulates of Kinetic Molecular Theory. (Remembering)	*		
	Describe the motion of particles of a gas according to Kinetic Theory. (Applying)			*
	State the values of standard temperature and pressure (STP). (Remembering)			*
	Relate temperature to the average kinetic energy of the particles in a substance.(Applying)			*
	Use Kinetic Theory to explain gas pressure. (Applying)			*
	Describe the effect of change in atmospheric pressure on the weather.			

	(Applying)			*
	Describe the effect of change in temperature on the volume of gas. (Applying)			*
	Explain the significance of absolute zero, giving its value in degree Celsius andKelvin. (Understanding)		*	
	State and explain the significance of Avogadro's Law. (Understanding)		*	
	Derive Ideal Gas Equation using Boyle's, Charles' and Avogadro's law.(Understanding)		*	
	Explain the significance and different units of ideal gas constant. (Understanding)		*	
	Distinguish between real and ideal gases. (Understanding)		*	
	Explain why real gases deviate from the gas laws. (Analyzing)			*
	Define and describe the properties of Plasma. (Applying)			*
Unit 5 Weightage 7 % States of Matter 2: Liquid				
	Describe simple properties of liquids e.g., diffusion, compression, expansion, motionof molecules, spaces between them, intermolecular forces and kinetic energy based on Kinetic Molecular Theory. (Understanding)		*	
	Explain applications of dipole-dipole forces, hydrogen bonding and London forces. (Applying)			*
	Explain physical properties of liquids such as evaporation, vapour pressure, boiling point, viscosity and surface tension. (Understanding)	*		
	Use the concept of Hydrogen bonding to explain the following properties of water: high surface tension, high specific heat, low vapor pressure, high heat of vaporization, and high boiling point. And anomalous behaviour of water when its density shows maximum at 4 degrees centigrade(Applying)			*
	Define molar heat of fusion and molar heat of vaporization. (Remembering)	*		
	Describe how heat of fusion and heat of vaporization affect the particles that makeup matter. (Understanding)		*	
	Relate energy changes with changes in intermolecular forces. (Applying)			*
	Define dynamic equilibrium between two physical states. (Remembering)	*		
	Describe liquid crystals and give their uses in daily life. (Applying)			*
	Differentiate liquid crystals from pure liquids and crystalline solids. (Applying)			*
Unit 6 Weightage 8 % States of Matter III: Solids				
	Describe simple properties of solids e.g., diffusion, compression,			

	expansion, motionof molecules, spaces between them, intermolecular forces and kinetic energy based on kinetic molecular theory. (Understanding)		*	
	Differentiate between amorphous and crystalline solids. (Understanding)		*	
	Describe properties of crystalline solids like geometrical shape, melting point,cleavage planes, crystal growth, anisotropy, symmetry, isomorphism, polymorphism,allotropy and transition temperature. (Understanding)		*	
	Use Sulphur to define allotropy. (Understanding)		*	
	Explain the significance of the unit cell to the shape of the crystal using NaCI as anexample. (Applying)			*
	Name three types of packing arrangements and draw or construct models of them.(Applying)			*
	Name three factors that affect the shape of an ionic crystal. (Understanding)		*	
	Define lattice energy. (Remembering)	*		
	Differentiate between ionic, covalent, molecular and metallic crystalline solids.(Applying)			*
	Explain the low density and high heat of fusion of ice. (Understanding)		*	
	Define and explain molecular and metallic solids. (Understanding)		*	
Unit 7	**Weightage 7 %**	**Chemical Equilibrium**		
	Define chemical equilibrium in terms of a reversible reaction. (Remembering)	*		
	Write both forward and reverse reactions and describe the macroscopic characteristics of each. (Understanding)		*	
	State the necessary conditions for equilibrium and the ways that equilibrium can be recognized. (Understanding)		*	
	Write the equilibrium expression for a given chemical reaction. (Understanding)		*	
	Relate the equilibrium expression in terms of concentration, partial pressure, numberof moles and mole fraction. (Applying)			*
	Write expression for reaction quotient. (Understanding)		*	
	Determine if the equilibrium constant will increase or decrease when temperature ischanged, given the equation for the reaction. (Applying)			*
	Determine the reactants or products are favored in a chemical reaction, given the equilibrium constant. (Analyzing)			*
	State Le Chatelier's Principle and be able to apply it to systems in equilibrium with changes in concentration, pressure, temperature, or the addition of catalyst. (Applying)			*
	Explain industrial applications of Le Chatelier's Principle using Haber's process as an example. (Analyzing)			

				*
	Define and explain solubility product. (Understanding)		*	
	Define and explain common ion effect giving suitable examples. (Applying)			*
Unit 8	**Weightage 7 %**	**Acid Base & Salt**		
	Define Bronsted and Lowery concepts for acids and bases (Remembering)	*		
	Identify conjugate acid-base pairs of Bronsted-Lowery acid and base (Analyzing)			*
	Explain ionization constant of water (Understanding)		*	
	Calculate pH, pOH in aqueous medium using Kw values. (Applying)			*
	Define and explain leveling effect. (Understanding)		*	
	Define Lewis acid and base with suitable examples (Remembering)	*		
	Define a buffer and make buffer solutions. (Applying)			*
	Show with equations how a buffer system works. (Applying)			*
	Applications of salts like NaCl, KCl, KI, $NaHCO_3$, $MgSO_4$, etc. (in tabular form)(Applying).			*
	Use the concept of hydrolysis to explain why aqueous solutions of some salts areacidic or basic. (Applying)			*
	Use concept of hydrolysis to explain why the solution of a salt is not necessarilyneutral. (Understanding)		*	
Unit9	**Weightage 7 %**	**Chemical Kinetics**		
	Define chemical kinetics. (Remembering)	*		
	Explain the terms rate of reaction, rate equation, order of reaction, rate constant andrate determining step. (Understanding)		*	
	Determine the order of reaction (Applying)			
	Calculate units of rate constant. (Applying)			
	Explain effects of concentration, temperature and surface area on reaction rates.(Applying)			*
	Explain why powdered zinc reacts faster. (Analyzing			*
	Explain what is meant by the terms activation energy and activated complex.(Understanding)		*	
	Relate the ideas of activation energy and the activated complex to the rate of areaction. (Applying)			*
	Illustrate the collision theory to explain how the rate of a chemical reaction isinfluenced by the temperature, concentration, size of molecules. (Applying)			*
	Illustrate a potential energy diagram for a reaction, discuss the reaction mechanismfor the reaction. (Applying)			*
	Define terms catalyst, catalysis, homogeneous catalysis and heterogeneous catalysis.(Understanding)		*	
	Enlist examples of catalyst in tabular form (Understanding)		*	

	Explain that a catalyst provides a reaction pathway that has low activation energy.(Applying)			*
	Describe enzymes as biological catalysts. (Understanding)*		*	
Unit 10 Weightage 10 %	**Solutions and Colloids**			
	List the characteristics of colloids and suspensions that distinguish them fromsolutions. (Understanding)		*	
	Define hydrophilic and hydrophobic molecules. (Remembering)	*		
	Explain the nature of solutions in liquid phase giving examples of completelymiscible, partially miscible and immiscible liquid-liquid solutions. (Applying)			*
	Explain the effect of temperature on solubility. (Understanding)		*	
	Express solution concentration in terms of mass percent, molality, molarity, parts permillion, billion and trillion and mole fraction. (Remembering)	*		
	Define Raoult's Law with suitable examples (Understanding)		*	
	Define the term colligative property. (Remembering)	*		
	List some colligative properties of liquids (Understanding)		*	
	Describe on a particle basis why a solution has a lower vapor pressure than the puresolvent. (Applying)			*
	Explain on a particle basis how the addition of a salute to a pure solvent causes an elevation of the boiling point and depression of the freezing point of the resultant solution. (Applying)			*
	Explain osmotic pressure, reverse osmosis and give their daily life applications. (Applying)			*
	Define thermodynamics. (Remembering)	*		
	Define the terms system, surrounding, boundary, state of system, state function, internal energy, enthalpy, entropy, heat of formation, standard heat of formation (Remembering)	*		
	Classify reactions as exothermic and endothermic. (Analyzing)			*
	Relate change in enthalpy to the heat of reaction and heat of combustion of a reaction.(Applying)			*
	Relate change in internal energy of a system with thermal energy at constant volumeand constant pressure. (Applying)			*
	Explain Hess's Law with examples. (Understanding)		*	
	Apply Hess's Law to construct simple energy cycles. (Applying)			*
	Explain reaction pathway diagram in terms of enthalpy changes of the reaction. (BornHaber's Cycle) (Applying)			*
	Give the characteristics of a Redox reaction. (Understanding)		*	

	Determine oxidation and reduction in terms of a change in oxidation number.(Applying)			*
	Determine the oxidation number of an atom of any element in a pure substance.(Applying)			*
	Enlist the oxidizing and reducing agents. (Remembering)	*		
	Balance redox reactions that take place in acid solutions. (Applying)			*
	Break a redox reaction into oxidation and reduction half reactions. (Applying)			*
	Balance the redox equation by using half-cell reaction method. (Applying)			*
	Define cathode, anode, electrode potential and S.H.E. (Standard HydrogenElectrode). (Remembering)	*		
	Identify the substance oxidized and the substance reduced in batteries. (Applying)			*
	Describe the cell potential and how it is determined. (Understanding)		*	
	Describe the reaction that occurs when a lead storage battery is recharged. (Applying)			*
	Illustrate how a fuel cell produces electrical energy. (Applying)			*
	Explain the types and uses of batteries in daily life. (Applying)			*

Class- XI

Chapter	**Weightage %**
Chapter 1: Stoichiometry	**8**
Chapter 2: Atomic Structure	**8**
Chapter 3: Theories of Covalent Bonding and Shapes of Molecules	**10**
Chapter 4: State of Matter I: Gases	**11**
Chapter 5: State of Matter II: Liquids	**7**
Chapter 6: States of Matter Ill: Solids	**8**
Chapter 7: Chemical Equilibrium	**7**
Chapter 8: Acids, Bases and Salts	**7**
Chapter 9: Chemical Kinetics	**7**
Chapter 10: Solutions and Colloids	**10**
Chapter 11: Thermochemistry	**9**
Chapter 12: Electrochemistry	**8**
Total:	**100**

Ziauddin University Examination Board
Grade XI-Chemistry
Table of Specification (TOS)

S.No	Strand	Chapter Name	Weightage %	Marks Distribution	MCQs (Sec # A)	CRQs (Sec # B)	ERQs (Sec # C)
1.	Physical Chemistry	Stoichiometry	8	09	01	02	-----
2.		Atomic Structure	8	13	01	01	01
3.	Inorganic Chemistry	Theories of Covalent Bonding and Shapes of Molecules	10	14	02	01	01
4.	States of Matter	State of Matter I: Gases	11	14	02	01	01
5.		State of Matter II: Liquids	7	05	01	01	-----
6.		States of Matter III: Solids	8	05	01	01	-----
7.		Chemical Equilibrium	7	13	01	01	01
8.	Analytical Chemistry	Acids, Bases and Salts	7	06	02	01	-----
9.		Chemical Kinetics	7	05	01	01	-----
10.		Solutions and Colloids	10	10	02	02	-----
11.		Thermochemistry	9	14	02	01	01
12.		Electrochemistry	8	13	01	01	01
TOTAL QUESTIONS HAS TO BE GIVEN					**17**	**14**	**03** (Two Parts of each question)
TOTAL MARKS DISTRIBUTION				**85**	**17**	**36**	**32**
TOTAL WEIGHTAGE			**100 %**	**20 %**		**40 %**	**40 %**

Ziauddin University Examination Board
Grade: XI -Chemistry
Scheme of assessment

Maximum marks: 85

PAPER SETTING SCHEME FOR ANNUAL 2023 EXAMINATION

SECTION A (MULTIPLE CHOICE QUESTIONS) 20 %

OBJECTIVES

Total Marks: 17

It consists of

- Multiple choice questions ========== **17** MCQs
- Given MCQs will be = 17 MCQs
- All MCQs to be answered

SECTION "B" (SHORT ANSWER QUESTIONS) 40 %

SUBJECTIVE

Total Marks: 36

- It consists of **14** Questions.
- To attempt **09 (Nine)** questions **(9 x 4 = 36)**
- **Note:** Each question carry **04** marks.

SECTION "C" (DETAILED ANSWER QUESTIONS) 40 %

SUBJECTIVE

Total Marks: 32

- It consists of **Three** questions
- To attempt **02** questions **(2 x 16 = 32)**
- Each question consists of **Two** parts (a & b)
- **Note:** Each part carry **08** marks.

DEFINITIONS OF COGNITIVE LEVELS

Remember

Remembering is the act of retrieving knowledge and can be used to produce things like definitions or lists. The student must be able to recall or recognise information and concepts. The teacher must present information about a subject to the student, ask questions that require the student to recall that information and provide written or verbal assessment that can be answered by remembering the information learnt.

Question Stems

- Can you name all the …?
- Describe what happens when …?
- How is (are) …?
- How would you define …?
- How would you identify …?
- How would you outline …?
- How would you recognise…?
- List the … in order.
- What do you remember about …?
- What does it mean?
- What happened after?
- What is (are) …?
- What is the best one?
- What would you choose …?
- When did …?
- Where is (are) …?
- Which one …?
- Who spoke to …?
- Who was …?
- Why did …?

Understand

The next level in the taxonomic structure is Understanding, which is defined as the construction of meaning and relationships. Here the student must understand the main idea of material heard, viewed, or read and interpret or summarise the ideas in their own words. The teacher must ask questions that the student can answer in their own words by identifying the main idea.

Question Stems

- Can you clarify…?
- Can you illustrate …?
- Condense this paragraph.
- Contrast …
- Does everyone think in the way that … does?
- Elaborate on …
- Explain why …
- Give an example
- How can you describe...?
- How would you clarify the meaning...?
- How would you compare …?
- How would you differentiate between …?
- How would you describe…?
- How would you generalise…?
- How would you identify …?
- Is it valid that …?
- Is this the same as …?
- Outline …
- Select the best definition...
- State in your own words...
- This represents …
- What are they saying?
- What can you infer from …?
- What can you say about …?
- What could have happened next?
- What did you observe?

	• What does this mean? • What expectations are there? • What information can you infer from…? • What is the main idea of …? • What restrictions would you add? • What seems likely? • What seems to be …? • What would happen if …? • What might happen if …? • Which are the facts? • Which statements support …?
Apply The third level in Bloom's taxonomy, Applying, marks a fundamental shift from the pre-Bloom's learning era because it involves remembering what has been learnt, having a good understanding of the knowledge, and applying it to real-world exercises, challenges or situations. Students must apply an abstract idea in a concrete case to solve a problem or relate it to prior experience. The teacher must provide opportunities for students to use theories and problem-solving techniques in new situations and review and check their work. Assessment questions should be provided that allow students to define and solve problems. **Question Stems** • Can you group by characteristics such as …? • Choose the best statements that apply... • Clarify why … • Do you know of another instance where …? • Draw a story map... • Explain why a character acted in the way that he did... • From the information given, can you develop a set of instructions about …? • How would you develop …? • How would you change …? • How would you demonstrate…?	**Analyse** Analysing is the cognitive level where students can take the knowledge they have remembered, understood and applied, then delve into that knowledge to make associations, discernments or comparisons. Students should break down a concept or idea into parts and show relationships between these parts. Teachers must give students time to examine concepts and their requisite elements. Students are required to explain why they chose a solution. **Question Stems** • Can you distinguish between …? • Can you explain what must have happened when …? • Determine the point of view, bias, values, or intent underlying the presented material... • Discuss the pros and cons of … • How can you classify … according to …? • How can you compare the different parts? • How can you sort the different parts…? • How is … connected to …? • How is … similar to …? • How would you categorise…? • How would you explain...?

• How would you develop? • How would you explain …? • How would you modify …? • How would you present…? • How would you solve … ? • Identify the results of … • Illustrate the … • Judge the effects of … What would result …? • Predict what would happen if … • Tell how much change there would be if … • Tell what would happen if … • What actions would you take to perform …? • What do you think could have happened next? • What examples can you find that ? • What other way would you choose to …? • What questions would you ask of …? • What was the main idea …? • What would the result be if …? • Which factors would you change if …? • Who do you think…? • Why does this work? • Write a brief outline … • Write in your own words …	• What could the ending have been if ... had taken place? • State the point of view of … • What are some of the problems of …? • What assumptions …? • What can you infer about…? • What can you point out about ? • What conclusions …? • What do you see as other possible outcomes? • What does the author assume? • What explanation do you have for …? • What ideas justify the conclusion? • What ideas validate…? • What is the analysis of …? • What is the function of …? • What is the problem with …? • What motive is there? • What persuasive technique is used? • What statement is relevant? • What was the turning point? • What were some of the motives behind …? • What's fact? Opinion? • What's the main idea? • What's the relationship between? • Which events could not have happened? • Why did … changes occur? • Why do you think ?

BLOOM'S TAXONOMY WITH EXAMPLES

Conclusion

If you are a teacher looking for ways to engage your students in learning, this LIST of questions might be interesting for your classroom practice. Bloom's Taxonomy question stems can help elicit higher-order thinking skills and promote critical thinking among learners at different taxonomy levels. These question stems can also encourage students to think about their knowledge through reflection before answering questions.

ACTION WORDS FOR COGNITIVE LEVELS

Knowledge	Understand	Apply	Analyze	Evaluate	Create
					
define	explain	solve	analyze	reframe	design
identify	describe	apply	appraise	criticize	compose
describe	interpret	illustrate	judge	evaluate	create
label	paraphrase	modify	support	order	plan
list	summarize	use	compare	compare	combine
name	classify	calculate	decide	classify	formulate
state	compare	change	discriminate	contrast	invent
match	differentiate	choose	recommend	distinguish	hypothesize
recognize	discuss	demonstrate	summarize	infer	substitute
select	distinguish	discover	assess	separate	write
examine	extend	experiment	choose	explain	compile
locate	predict	relate	convince	select	construct
memorize	associate	show	defend	categorize	develop
quote	contrast	sketch	estimate	connect	generalize
recall	convert	complete	grade	differentiate	integrate
reproduce	demonstrate	construct	measure	divide	modify
tabulate	estimate	dramatize	predict	order	organize
tell	express	interpret	rank	prioritize	prepare
Copy	identify	manipulate	score	survey	produce

discover	indicate	paint	select	calculate	rearrange
duplicate	infer	prepare	test	conclude	rewrite
enumerate	relate	teach	argue	correlate	adapt
listen	restate	act	conclude	deduce	anticipate
observe	select	collect	consider	devise	arrange
omit	translate	compute	critique	diagram	assemble
read	ask	explain	debate	dissect	choose
recite	cite	list	distinguish	estimate	collaborate
record	discover	operate	editorialize	evaluate	facilitate
repeat	generalize	practice	justify	experiment	imagine
retell	group	simulate	persuade	focus	intervene
visualize	illustrate	transfer	rate	illustrate	make
	judge	write	weigh	organize	manage
	observe			outline	originate
	order			plan	propose
	report			question	simulate
	represent			test	solve
	research				support
	review				test
	rewrite				validate
	show				

HSSC PART I EXAMINATION
MARKS BREAKUP GRID FOR EXAMINATION 2025

GROUP: PRE-MEDICAL

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL / URDU EASY	100	-	100
ISLAMIYAT / ETHICS	50	-	50
PHYSICS	85	15	100
CHEMISTRY	85	15	100
BIOLOGY	85	15	100
TOTAL	505	45	550

GROUP: PRE-ENGINEERING

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL / URDU EASY	100	-	100
ISLAMIYAT / ETHICS	50	-	50
PHYSICS	85	15	100
CHEMISTRY	85	15	100
MATHEMATICS	100	--	100
TOTAL	520	30	550

GROUP: GENERAL SCIENCE

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL / URDU EASY	100	-	100
ISLAMIYAT / ETHICS	50	-	50
PHYSICS	85	15	100
COMPUTER SCIENCE	75	25	100
MATHEMATICS	100	--	100
TOTAL	510	40	550

GROUP: COMMERCE

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL / URDU EASY	100	-	100
ISLAMIYAT / ETHICS	50	-	50
ECONOMICS	75	-	75
P.O.C	75	-	75
ACCOUNTING	100	--	100
BUSINESS MATHEMATICS	50		50
TOTAL	550	---	550

GROUP: HUMANITIES

(Any Three Electives)

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL / URDU EASY	100	-	100
ISLAMIYAT / ETHICS	50	-	50
COMPUTER SCIENCE	75	25	100
ISLAMIC STUDIES	100		100
MATHEMATICS	100	-	100
SOCIOLOGY	100	--	100
ECONOMICS	100		100
EDUCATION	100		100
CIVICS	100		100
NURSING	85	15	100
TOTAL	550	---	550

GROUP: MEDICAL TECHNOLOGY

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL / URDU EASY	100	-	100
ISLAMIYAT / ETHICS	50	-	50
MICROBIOLOGY	85	15	100
HEMATOLOGY & BLOOD BANKING	85	15	100
ANATOMY & PHYSIOLOGY	85	15	100
TOTAL	505	45	550

GROUP: PRE-NURSING

SUBJECT	THEORY	PBA	TOTAL
ENGLISH	100	-	100
URDU NORMAL / URDU EASY	100	-	100
ISLAMIYAT / ETHICS	50	-	50
BIO-CHEMISTRY	85	15	100
FUNDAMENTALS OF NURSING	85	15	100
ELEMENTARY ANATOMY & MICRO TECHNIQUE	85	15	100
TOTAL	505	45	550