ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

Secondary School Certificate
(SSC)

Examination syllabus

Biology
IX

Based on Provincial revised curriculum (Sindh)

S.No.	Table of Contents	Page No.
1	Preface	03
2	Rationale for the reviewed Provincial Curriculum	04
3	Aims and Objectives of the subject of specific syllabus	5- 7
4	Topics and Student Learning Outcomes of the Examination Syllabus Teaching-Learning Approaches and Classroom Activities Resource Material and e resources website Website: www.zueb.edu.pk	8 -14
5	Scheme of Assessment	15
6	Definition of Cognitive Levels and Command Words in the Student Learning Outcomes in Examination Papers	16 - 20
7	SSC Scheme of Studies	21

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PREFACE

Ziauddin University Examination Board (ZUEB) was established by the Sindh ACT XLI 2018, with the aim of improving the quality of education. The Board administers examinations for the Secondary School Certificate (SSC) and Higher Secondary School Certificate (HSSC) based on the latest Reviewed National Curriculum by Directorate Curriculum Assessment and Research (DCAR) Sindh. ZUEB has a mandate by Ordinance to offer such examination services to English /Urdu and Sindhi medium candidates for SSC and HSSC from private schools in Sindh. This examination syllabus exemplifies ZUEB's commitment to provincial educational goals

The Examination Board has prepared with the help of subject professors, subject wise syllabus. It is important to make the difference between syllabus and curriculum. The syllabus of a subject is considered as a guide for the subject teacher as well as the students. It helps the students understand the subject in detail. It also helps students to anticipate what is expected from them while preparing for the exams.

This examination syllabus brings together all those cognitive outcomes of the Provincial Curriculum statement which can be reliably and validly assessed. While the focus is on the cognitive domain, particular emphasis is given to the application of knowledge and understanding.

The examination syllabus is uploaded on the ZUEB website. This is done to help affiliated schools in planning their teaching. It is the syllabus, not the prescribed textbook which is the basis of the ZUEB examinations. In addition, the ZUEB examination syllabus is used to develop learning support materials for students and teachers. The examination board stand committed to all students who have embarked upon the SSC, and HSSC courses in facilitating their learning outcomes. Our examination syllabus document ensures all possible support.

On the Ziauddin University Examination Board website a tab e –resource is made available which provides resource material in all subjects both in text form in line with the curriculum and also videos on topics to give students access to learn at their own pace and own time. These 15 to 20 minutes videos are prepared around subject concept / topics. These videos are available to the students for revisiting a lesson taught by their teacher or watch it prior to the lesson and as a reinforcement strategy. The work on videos is in progress and new titles will be uploaded.

Please look out for the videos on the given website

Humbly Yours;

Shahbaz Nasim
Curriculum Coordinator

AIMS AND OBJECTIVES:

AIMS:

- The curriculum for Biology for grades IX-X aims to help individual students develop:
- A scientific understanding of the living world
- Mental and motor abilities appropriate to the acquisition and use of biological understanding
- An appreciation of the products and influences of science and technology, balanced by a concern for their wise application
- An understanding of the nature and limitations of scientific activity
- An ability to apply biological understanding to appropriate problems (including those of everyday life) and to approach those problems in rational ways
- Respect for evidence, rationality and intellectual honesty
- Capacities to express themselves coherently and logically, both orally and in writing, and to use appropriately modes of communication characteristic of scientific work
- An ability to work effectively with others.

OBJECTIVES:

- A statement of objectives relevant to each of the general aims is listed below. The sequence of objectives used here should not be taken as indicating relative weightings. Understanding the Living World: Students should understand the scientific concepts inherent in the theme for each chapter to be covered well enough to be able to:
- state, exemplify and interpret the concept
- use appropriately, fundamental terms and classifications related to the concept
- cite, and explain or interpret, scientific evidence in support of the concept. Appropriate Mental and Motor Abilities: Students should show some 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 procedures
- use the motor skills required to carry out investigations
- observe phenomena, and describe, measure and record these as data
- classify, collate and display data
- interpret and construct visual representations of phenomena and relationships (diagrams, graphs, flow charts, physical models etc.
- analyze data and draw conclusions
- evaluate investigative procedures and the conclusions drawn from investigations. Understanding the Nature and Limitations of Scientific Activity: For each of the facets of scientific activity selected for study, students should:
- describe and exemplify it
- use appropriately any fundamental terms and classifications 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. Appreciation of the Influences of Science and Technology: Students should:
- recognize that the technology resulting from scientific activity influences the quality of lifestyle and economic development through or by improvements in medical/health care, nutrition, agricultural techniques
- understand that these influences may be the result of unforeseen consequences, rapid exploitation or rapid cultural change
- realize that advances in technology require judicious application. Ability to apply Understanding to Problems: Students should:
- recognize that biological knowledge and scientific approaches have relevance to many situations in everyday life
- recognize when biological knowledge is relevant to a problem
- recognize when a scientific approach is relevant to a problem
- select and apply appropriate biological knowledge and skills to clarify and help produce solutions to problems, especially the personal and social problems of everyday life to which such knowledge and skills can apply
- use thoughtful, rational strategies for decision-making in those everyday situations to which both biological knowledge and value positions are relevant.
- Respect for Evidence, Rationality and Intellectual Honesty:
- *Given the number of emotive issues in the area of biology, students should display respect for evidence, rationality and intellectual honesty.

Capacities to Communicate:

- Students should:
- comprehend the intention of a scientific communication, the relationships between its parts and its relationship to what they already know
- select the relevant parts from a communication
- translate information from communications in particular modes (e.g. spoken word, written word, tables, graphs, flow sheets, diagrams) to other modes
- Structure information and use appropriate modes (including the spoken word, writing and diagrams) to communicate it. Ability to work with others
- Students should participate in group work in such a way that he or she:
- shares the responsibility for achieving a group task
- shows concern for the fullest possible participation of each group member.

ZIAUDDIN UNIVERSITY EXAMINATION BORD

SLOs CATEGORIZATION AND SCHEME OF ASSSESSMENT

Detailed Syllabus

Unit	SLOS	Categorisation as per curriculum			Table of specification		
					Marks Distribution		
	Student will:	K	U	A	MCQs	CRQs	ERQs
Chapter1 **Introduction to biology**	• Define biology its major divisions i.e., botany, zoology and microbiology. • Define the branches of biology i.e. morphology, anatomy, physiology, embryology, taxonomy, cell biology, histology, paleontology, environmental biology, biotechnology, socio-biology, parasitology, immunology, entomology, genetics, pharmacology. • Link the study of biology with that of physics, chemistry, mathematics, geography and economics. • Explain how the study of biology can lead to Medicine / Surgery, Fisheries, Agriculture, Animal husbandry, Biotechnology, Horticulture, Farming, Forestry. • Identify that living organisms are divided in five groups i.e. prokaryotes, protists, fungi, plants and animals. • Relate at least three verses from Holy Quran, instructing for the study of the origin and the characteristics of life, with the modern scientific achievements. • Relate the contributions of Jaber Bin Hayan, Abdul Malik Asmai and Bu Ali Sina with the current knowledge about plants and animals. • Describe bio elements as the most the most basic level of biological organization.	✓ ✓ ✓ ✓	 ✓ ✓ ✓ ✓	 ✓ ✓ ✓	1	1	-----

	• distinguish and Define macromolecules and macromolecules. • Describe the level of organization of life (organelles, cells, tissues, organs and organ systems. • Compare cellular organization in organisms i.e. unicellular organization (Amoeba), colonial organization (Volvox) and multicellular organization (mustard and frog). • Identify different organs and organ systems in a dissected frog.	✓					
Chapter 02 **Solving a Biological Problems**	Student will: • Describe the steps involved in biological method i.e. recognition of a biological problem, observation and identification, building up hypotheses, drawing deductions, devising experiments and inferring results (malaria as an example). • Describe the use of ratio and proportion in solving biological problems. • Explain the importance of data analysis for confirming, modifying, or rejecting a hypothesis. • Justify mathematics as an integral part of the scientific process. • Identify and pose meaningful, answerable scientific questions. • Use ratio and proportion in appropriate situations to solve problems.	 ✓ ✓	✓ ✓ ✓	 ✓	**MCQs** **1**	**CRQs** **1**	**ERQs** **----------**
Chapter 3 **BIODIVERSITY**	Student will: • Define biodiversity. • Describe the major variety of life on the planet earth. • Explain the aims and principles of classification, keeping in view its historical background. • Identify the contributions of Aristotle as the founder of biological classification. • Describe the distinguishing taxonomic characters of fresh and preserved specimens kept in laboratory.	 ✓ ✓	 ✓ ✓ ✓ ✓	 ✓	**MCQs** **1**	**CRQs** **1**	**ERQs** **1**

	• Compare Two-kingdom and Five-kingdom classification systems. • Describe the diagnostic characteristics of the five kingdoms. • Describe the acellular structure of virus and justify why virus are excluded from the Five Kingdom classification system. • Define the concept of conservation. • Explain the impact of human beings on biodiversity. • Identify causes of deforestation and its effects on biodiversity. • Describe some of the issues of conservation in Pakistan (especially with regard to deforestation and hunting). • Describe the reasons why a named animal species becomes endangered due to human interference. (e.g., Houbara bustard, blind dolphin and Marco polo sheep)	 ✓ ✓ ✓ ✓	✓ ✓	 			
Chapter 04 **CELLS AND TISSUES**	Student will: • Explain the concepts of light microscopy and electron microscopy. • Trace the development of the cell theory: from Aristotle to Hooke, Pasteur, Brown, and Schwann and Schleiden. • Construct a time line that traces the development of the cell theory from the first observations by Robert Hooke to our current understanding of cell structure. • Use a microscope to observe movement of small objects • Identify the structure and describe, in general terms, the functions of the components of plant and animal cell. • Explain how the cells of the leaf system have a variety of specialized structures and functions. • State the relationship between cell function and cell structure . • Describe the differences in the structure and function of Prokaryotic and Eukaryotic Cells.	 ✓ ✓ ✓ 	 ✓ ✓ ✓ ✓ ✓	 ✓ ✓	**MCQs** **2**	**CRQs** **1**	**ERQs** **1**

	• Describe cell size and shape as they relate to surface area to volume ratio. • Draw diagrams to represent differences between plant and animal cells. • Describe the phenomena of diffusion, facilitated diffusion, osmosis, filtration, active transport, endocytosis and exocytosis. Describe the phenomena of plasmolysis and explain its relationship with osmosis. • Describe the major animal tissues (epithelial, connective, muscular and nervous) in terms of their cell specificities, locations and functions. • Describe the major plant tissues i.e. simple tissues (meristematic tissues, permanent tissues) and compound tissues (xylem tissues and phloem tissues) in terms of their cell specificities		✓ ✓ ✓ ✓				
Chapter 05 **Cell Cycle**	Student will: • Define Cell Cycle and describe its main phases i.e. Interphase and Division. • Describe the sub-phases of the Interphase of Cell Cycle. • Describe the two types of Cell Division in Eukaryotic cells i.e. Mitosis and Meiosis. • Enlist the events through which Mitotic Apparatus is formed in prophase in animal and plant cells. • Describe the formation of metaphase plate and the division of centromere, during metaphase. • State the separation of chromatids during anaphase. • Compare the details of events during mitosis in animal and plant cells. • Describe the significance of mitosis as giving rise to genetically identical cells and state the role • of mitosis in growth, repair of damaged tissues, replacement of worn out cells and asexual reproduction. • Describe the events of Prophase-I, Metaphase-I, Anaphase-I, Telophase-I. • Compare the Second Meiotic division with mitosis.	✓ ✓ ✓	 ✓ ✓ ✓ ✓ ✓ ✓ ✓	 ✓ ✓	**MCQs** **2**	**CRQs** **1**	**ERQs** **1**

	• Describe the significance of meiosis • Describe Necrosis and Apoptosis.						
Chapter 05 **Enzymes**	Student will:				**MCQs** **1**	**CRQs** **1**	**ERQs** **1**
	• Define metabolism and differentiate between catabolism and anabolism.	✓					
	• Describe enzymes as the proteins that speed up biochemical reactions.		✓				
	• Categorize enzymes as intra and extracellular.			✓ ✓			
	• Comprehend that enzymes increase rate of reaction.	✓					
	• State that small quantity of enzyme is effective for large amount of substrate.	✓					
	• State that some enzymes require co-factor for their functioning.		✓				
	• Describe the concept of energy of activation and how it is lowered by enzyme.		✓				
	• Explain the effect of pH, temperature and concentration of substrate on the activity of an enzyme.		✓ ✓				
	• Describe, through equation, that enzyme substrate complex is formed and release of enzyme takes place after completing the reaction.	✓	✓				
	• Define the action of enzyme through Lock-n-Key Model.			✓ ✓			
	• Describe the specificity of different enzymes for different substrates.						
	• Relate that specificity of enzyme is due to its shape.						
	• Perform experiment to show working of enzyme in vitro e.g., pepsin working on meat in test tube.						
Chapter 06 **Bioenergetics**	Student will:				**MCQs** **2**	CRQs **2**	ERQs **1**
	• Define Bioenergetics as the study of energy relationships and energy conversions in living organisms.	✓	✓				
	• Describe the importance of Oxidation-Reduction reactions for the flow of energy through living systems.		✓				

	• Explain ATP as a molecule that is the chief energy currency of all cells.		✓				
	• Describe the synthesis and breaking of ATP through ATP-ADP cycle.			✓			
	• Design the molecular model of ATP using low-cost no-cost materials and label its components.	✓					
	• State that photosynthesis is the fundamental process by which plants manufacture carbohydrates from raw materials.	✓	✓				
	• State the equation (in words or symbols) for photosynthesis.	✓					
	• Describe that chlorophyll traps light energy and converts it into chemical energy for the formation of carbohydrates and their subsequent storage.		✓				
	• Outline the processes (Light and Dark reactions) involved in photosynthesis.		✓				
	• Describe, in general terms, the intake of carbon dioxide and water by plants.		✓				
	• Explain the concept of limiting factors in photosynthesis.		✓	✓			
	• Identify and label the cellular and tissue structure in the cross section of a leaf through	✓					
	• Demonstrate an experiment to show the process of photosynthesis using an aquatic plant, like Hydrilla.			✓			
	• Describe anaerobic and anaerobic respiration by means of word and symbol equation.						
	• Define the mechanism of respiration while defining Glycolysis, Krebs cycle and Electron Transport Chain.						
	• Compare aerobic and anaerobic respiration with reference to the amount of energy released.						
Chapter:07 **Nutrition**	Student will: • Define mineral nutrition in plants. • Categorize minerals nutrients into macronutrients and micronutrients.	✓ ✓ ✓	✓		**MCQs** **1**	**CRQs** **2**	**ERQs** **1**

	• State that nitrogen is important in protein synthesis and magnesium for chlorophyll formation and effect of lack of nitrate and magnesium ions on plant growth. • Describe the importance of fertilizers (manure and chemical) in agriculture. • Discuss environmental hazards related to chemical fertilizers' use. • Distinguish among carbohydrates, proteins and fats in terms of their sources, energy values and metabolic functions. • Specify the food sources and metabolic functions of Vitamins A, C and D, Calcium and Iron. • Describe the deficiency symptoms of Vitamins A, C and D and of Calcium and Iron. • Describe the concept and need for a balanced diet. • Explain the components of a balanced diet with relation to age, sex and activity. • Explain why diet, especially energy intake, should be related to age, sex and activity of an individual. • State the effects of malnutrition in relation to starvation, heart disease, constipation and obesity. • Indicate the needs of ingestion, digestion, absorption, assimilation and egestion. • Describe the main functions of these parts in relation to ingestion, digestion, absorption, assimilation and egestion of food. • State the role of the liver in the metabolism of glucose and amino acids, and in the formation of urea. • Describe the significance of villi in increasing the internal surface area.	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓			
Chapter 08 **Transport**	Student will: • Explain the internal structure of root and root hair. • Describe how roots take up water and mineral salts by active and passive absorption.	✓	✓		**MCQs** **1**	**CRQs** **2**	**ERQs** **1**

	• Define transpiration and relate this process with cell surface.			✓			
	• Relate transpiration with stomatal opening and closing.		✓				
	• Describe temperature, wind and humidity as the factors affecting the rate of transpiration.		✓ ✓	✓			
	• Describe the significance of transpiration.		✓				
	• Relate wilting with excessive transpiration.						
	• Describe the pathway of water and food in stem.		✓				
	• Explain the movement of water in terms of transpiration pull.						
	• Explain the mechanism of food translocation by the theory of Pressure Flow Mechanism.	✓		✓			
	• Describe the structure and number of stomata after microscopic observation of an epidermal peel of a leaf.		✓				
	• Identify xylem and phloem tissues in the prepared slides of stem, root and leaf.	✓					
	• Transport in Man						
	• List the functions of the components of blood.			✓			
	• Describe the blood groups in ABO and Rh blood group systems, with reference to the presence / absence of antigens and antibodies.	✓ ✓	 ✓				
	• State the risk of incompatibility in blood transfusion due to antigen-antibody reactions.		✓				
	• List the appropriate donors and recipients for each of the four blood groups.		✓				
	• State the signs and symptoms, causes and treatments of the diseases of blood (leukemia and thallassemia).		✓				
	• Identify red and white blood cells as seen under the light microscope on prepared slides (or in diagrams and photomicrographs).	✓	 ✓				
	• Describe the major pathway of blood through circulatory system.		✓	✓			
	• Describe the external and internal structure of human heart.		✓				

	• Describe the circulation of blood through atria and ventricles of the heart, explaining the role of the bicuspid, tricuspid and semilunar valves. • Define the terms heartbeat, heart rate and pulse rate. • Identify in a diagram of the heart the right atrium, right ventricle, left atrium, left ventricle, bicuspid valve, tricuspid valve, semi-lunar valves, pulmonary artery, pulmonary vein, aorta, superior and inferior vena cava and septum. • Compare the structure and function of an artery, a vein and a capillary. • Describe the transfer of materials between capillaries and tissue fluid. • Describe the originating areas, locations and target heart chambers of main veins i.e. Pulmonary veins, Superior vena cava, Inferior vena cava with Femoral veins, Renal veins and Hepatic vein. • Identify the main arteries and veins in charts, diagrams, models etc. • Describe the contributions of Ibn-al-Nafees and William Harvey in revealing the knowledge about the circulation of blood in human body. • Define cardiovascular disorders and differentiate between Atherosclerosis and Arteriosclerosis. • State the causes, treatments and prevention of Myocardial infarction.	✓ ✓ ✓	✓				
Total	**No of question and attempts** **MCQs=20%** **CRQs = 40%** **ERQs = 40%**				**12 out of 12**	**08 Out of 12**	**4 out of 06**
Total Marks	**60**				**12**	**24**	**24**

Scheme of Assessment
Grade IX
Table of Specification (TOS)

Sections	Chapters	Weightage in Evaluation as per Curriculum	MCQs			CRQs			ERQs		
Section 1 **Study of Life & Biodiversity**	**1.** Introduction to Biology	**09 %**	1			1			-----		
	2. Solving Biological Problem		1			1			1		
	3. Biodiversity		1			2			1		
	Total		**03**			**04**			**02**		
	Cognitive Level		**K**	**U**	**A**	**K**	**U**	**A**	**K**	**U**	**A**
	Distribution		**1**	**1**	**1**	**1**	**1**	**2**	**1**	**1**	**----**
Section 2 **Cell Biology**	**4.** Cells and Tissues	**23 %**	02			1			1		
	5. Cell Cycle		02			1			---		
	6. Enzymes		01			1			---		
	7. Bioenergetics		02			2			1		
	Total		**07**			**05**			**02**		
	Cognitive Level		**K**	**U**	**A**	**K**	**U**	**A**	**K**	**U**	**A**
	Distribution		**2**	**3**	**2**	**2**	**2**	**1**	**1**	**1**	**---**
Section 3 **Life Processes**	**8.** Nutrition	**40 %**	1			2			1		
	9. Transport		1			1			1		
	Total		**02**			**03**			**02**		
	Cognitive Level		**K**	**U**	**A**	**K**	**U**	**A**	**K**	**U**	**A**
	Distribution		**---**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**---**
Paper Scheme as per new scheme of studies. **Total Marks of Theory paper: 60**		**Total Questions**	**12 Marks**			**24 Marks**			**24 Marks**		
		Percentage	**20%**			**40%**			**40%**		
		Attempt	**12 out of 12**			**08 out 0f 12**			**4 0ut 0f 06**		

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 would 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 could you develop …? • How would you change …? • How would you demonstrate…? • How would you develop … to present ? • How would you explain …?	**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 ? • If … happened, what might the ending have been? • State the point of view of … • What are some of the problems of …?

• 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 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 ?

BLOOMS 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				

SSC PART I EXAMINATION
MARKS BREAKUP GRID FOR EXAMINATION 2023

SCIENCE GROUP:

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	75	-	75
ISLAMIAT/ETHICS	75	-	75
PHYSICS	60	15	75
CHEMISTRY	60	15	75
BIOLOGY	60	15	75
MATHEMATICS	75	-	75
TOTAL	505	45	550

COMPUTER SCIENCE GROUP:

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL/SINDHI NORMAL	75	-	75
ISLAMIAT/ETHICS	75	-	75
PHYSICS	60	15	75
CHEMISTRY	60	15	75
COMPUTER STUDIES	60	15	75
MATHEMATICS	75	-	75
TOTAL	505	45	550

GENERAL GROUP:

SUBJECT	THEORY	PRACTICAL	TOTAL
ENGLISH	100	-	100
URDU NORMAL / SINDHI NORMAL	75	-	75
ISLAMIAT/ETHICS	75	-	75
GENERAL SCIENCE	75	-	75
GENERAL MATH	75	-	75
EDUCATION	75	-	75
ECONOMICS	75	-	75
CIVICS	75	-	75
ISLAMIC STUDIES	75	-	75
TOTAL	550	-	550