

TABLE OF SPECIFICATION BIOLOGY 9TH

Ch: No	CH: Name	Topic	Sub Topic	Item	Item+ Marks	Cognitive Level	SLOs Selected for model paper Items (Biology)
1	Introduction to biology	Introduction to Biology	Branches of Biology	MCQ	1+1	Knowledge	<ul style="list-style-type: none"> Define biology its major divisions i.e. botany, zoology and microbiology.
		Level of biological organization	Level 5: Tissues	RRQ	1+4	Understanding	<ul style="list-style-type: none"> Describe the level of organization of life (organelles, cells, tissues, organs and organ systems and individuals).
2	Solving Biological Problem	Biological method	Deductions	MCQ	1+1	Understanding	<ul style="list-style-type: none"> 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).
		Examples of biological method	Data organization and data analysis	ERQ	1+4	Understanding	<ul style="list-style-type: none"> Justify mathematics as an integral part of the scientific process.
3	Biodiversity	Classification of organisms	Principles of classification	MCQ	1+1	Understanding	<ul style="list-style-type: none"> Explain the aims and principles of classification, keeping in view its historical background.
		Five kingdom system	Distinguish characteristics of five kingdoms	RRQ	1+4	Understanding	<ul style="list-style-type: none"> Describe the diagnostic characteristics of the five kingdoms
		Conservation of biodiversity	Conservation of biodiversity	ERQ	1+3	Knowledge	<ul style="list-style-type: none"> Define the concept of conservation.
4	Cells and Tissues	Cellular structure and functions	Centriole	MCQ	2+2	Knowledge+ Application	<ul style="list-style-type: none"> Identify the structure and describe, in general terms, the functions of the components of plant and animal cell. Compare passive transport of matter by diffusion and osmosis with active transport (e.g. Diffusion of glucose from intestine to villus epithelium and active transport of Sodium ions from nerve cell to outside.)
		Passage of molecules into and out of cells	Diffusion				
		Microscopy	Electron microscopy	RRQ	2+8	Understanding + Knowledge	<ul style="list-style-type: none"> Explain the concepts of light microscopy and electron microscopy Define turgor and describe its importance.

		Osmosis	Turgor				
		Animal tissues	Animal tissues	ERQ	1+4	Understanding	<ul style="list-style-type: none"> Describe major animal tissues.
5	Cell Cycle	Cell cycle	Events of interphase	MCQ	2+2	Understanding + Understanding	<ul style="list-style-type: none"> Describe the sub-phases of Interphase of Cell Cycle. Describe Necrosis and Apoptosis.
		Apoptosis and necrosis	Apoptosis and necrosis				
		Differences between prokaryotic and eukaryotic cell	Differences between prokaryotic and eukaryotic cell	RRQ	2+8	Application+ Knowledge	<ul style="list-style-type: none"> Describe the differences in the structure and function of prokaryotic and eukaryotic cell Enlist the events through which Mitotic Apparatus is formed in prophase in animal and plant cells.
		Karyokinesis	Prophase				
		Cell cycle	Cell cycle	ERQ	1+3	Knowledge	<ul style="list-style-type: none"> Define Cell Cycle and describe its main phases i.e. Interphase and Division.
6	Enzymes	Mechanism of enzyme action	Lock and Key model	MCQ	1+1	Understanding	<ul style="list-style-type: none"> Describe the action of enzyme through Lock-n-Key Model.
		Characteristics of enzyme	Specificity of enzyme	RRQ	1+4	Understanding	<ul style="list-style-type: none"> Describe the specificity of different enzymes for different substrates.
		Characteristics of enzyme	Characteristics of enzyme	ERQ	1+3	Application	<ul style="list-style-type: none"> Categorize enzymes as intra and extracellular
7	Bio-Energetics	Importance of oxidation-reduction reactions	Importance of oxidation-reduction reactions	MCQ	2+2	Understating+ Understanding	<ul style="list-style-type: none"> Describe the importance of Oxidation-Reduction reactions for the flow of energy through living systems. Explain the concept of limiting factors in photosynthesis.

		The concept of limiting factors in photosynthesis	The concept of limiting factors in photosynthesis				
		Comparison between Photosynthesis and respiration	Comparison between Photosynthesis and respiration	RRQ	1+4	Application	<ul style="list-style-type: none"> Compare respiration and photosynthesis.
		ATP as the energy currency of cells	ATP as the energy currency of cells	ERQ	1+4	Understanding	<ul style="list-style-type: none"> Describe the synthesis and breaking of ATP through ATP-ADP cycle.
8	Nutrition	Minerals	Role of calcium	MCQ	1+1	Application	<ul style="list-style-type: none"> Categorize minerals nutrients into macronutrients and micronutrients.
		Components of human food	Vitamin D	RRQ	1+4	Understanding	<ul style="list-style-type: none"> Describe the deficiency symptoms of Vitamins A, C and D and of Calcium and Iron.
		Disorder of Gut	Diarrhea	ERQ	1+3	Understanding	<ul style="list-style-type: none"> State the signs and symptoms, causes, treatments and preventions of the disorders of gut i.e. diarrhea, constipation, and ulcer.
9	Transport	Transportation of water	Transportation of water	MCQ	1+1	Understanding	<ul style="list-style-type: none"> Describe the pathway of water and food in stem.
		Transport in Human Beings	Blood	RRQ	2+8	Knowledge+ Understanding	<ul style="list-style-type: none"> List the functions of the components of blood. Describe the external and internal structure of human heart.
		Human heart	Arteries				
		Cardiovascular Disorder	Atherosclerosis and Arteriosclerosis	ERQ	1+4	Application	<ul style="list-style-type: none"> Differentiate between Atherosclerosis and Arteriosclerosis.