APOLLO

FBISE Biology Class 11
Topical workbook - Volume 2 of 4

140 questions arranged by official framework topic.
National Curriculum 2022-23; supported examinations from 2027.

APOLLO

Molecular Biology

Domain C: Molecular Biology

First Annual 2026 | Section B Q2(xi) | 3 marks

(xi)	Write down the importance of following: a. High specific heat capacity of water. b. Lower density of ice.	1.5 + 1.5

First Annual 2026 | Section B Q2(xiii) OR | 3 marks

Write roles of prostaglandin hormone as local hormones.	1x3

OR	Describe how open chain structure of ribose is being converted into ring structure? Also draw ring structure of ribose.	2+1

APOLLO

Cell and Subcellular organelles

Domain D: Cells and Subcellular Organelles

FBISE model paper | Section A Q1 | 0.5 marks

1.	A certain poison disrupts the cytoskeleton of cell. Which of the following functions would be affected most probably by the poison?	Digestion within lysosomes	Protein synthesis	Cell division	Cellular respiration

FBISE model paper | Section A Q27 | 0.5 marks

27.	Cell signalling is best described as:	Movement of molecules across membrane	Communication between cells	Continuous Energy production	Continuous cell growth

FBISE model paper | Section A Q28 | 0.5 marks

28.	Stem cells are unique because they:	Can only perform one specialized function	Regulate the activities of other cells	Are highly differentiated cells	Can divide to produce specialized cells

FBISE model paper | Section A Q31 | 0.5 marks

31.	Movement of water molecules across plasma membrane is known as:	Diffusion	Active transport	Phagocytosis	Osmosis

FBISE model paper | Section A Q32 | 0.5 marks

32.	Which feature is present in eukaryotes but absent in prokaryotes?	Ribosomes	Cell membrane	Nuclear membrane	Cytoplasm

FBISE model paper | Section A Q57 | 0.5 marks

Scenario for MCQ# 57 to 60	**A pharmaceutical company is developing a synthetic hormone-like drug intended to regulate blood glucose levels. During laboratory testing, scientists observe that the drug is affecting the liver cell functioning. Despite not entering the cell, the drug successfully triggers a series of events leading to intracellular biochemical reactions that ultimately decrease the blood glucose level.**

57.	The drug would most likely be _____and binds with_____:	Protein : intracellular receptor	Steroid : intracellular receptor	Protein : Cell surface receptors	Steroid : Cell surface receptors

FBISE model paper | Section A Q58 | 0.5 marks

Scenario for MCQ# 57 to 60	**A pharmaceutical company is developing a synthetic hormone-like drug intended to regulate blood glucose levels. During laboratory testing, scientists observe that the drug is affecting the liver cell functioning. Despite not entering the cell, the drug successfully triggers a series of events leading to intracellular biochemical reactions that ultimately decrease the blood glucose level.**

58.	After receptor binding, the signal is transmitted within the cell mainly by:	DNA replication	ATP production	Protein digestion	second messenger production

FBISE model paper | Section A Q59 | 0.5 marks

Scenario for MCQ# 57 to 60		**A pharmaceutical company is developing a synthetic hormone-like drug intended to regulate blood glucose levels. During laboratory testing, scientists observe that the drug is affecting the liver cell functioning. Despite not entering the cell, the drug successfully triggers a series of events leading to intracellular biochemical reactions that ultimately decrease the blood glucose level.**			
59.	If the receptor is defective or blocked, the most probable direct effect will be:	Increased response	No cellular response	Faster diffusion	DNA mutation

FBISE model paper | Section A Q60 | 0.5 marks

Scenario for MCQ# 57 to 60		**A pharmaceutical company is developing a synthetic hormone-like drug intended to regulate blood glucose levels. During laboratory testing, scientists observe that the drug is affecting the liver cell functioning. Despite not entering the cell, the drug successfully triggers a series of events leading to intracellular biochemical reactions that ultimately decrease the blood glucose level.**			
60.	All the following statements justify that this drug is a protein hormone **EXCEPT**:	Drug binds the cell surface receptors	Drug directly enter the cells	Drug does not directly interact with DNA	Drug produces second messenger

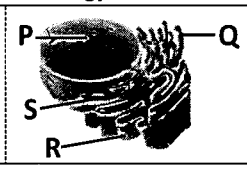
FBISE model paper | Section B Q2 | 4 marks

2.	What are the chemical compositions and significance of primary and secondary layers of cell wall in plant cell?	2+2

First Annual 2025 | Section A Q2 | 1 mark

ہر سوال کے سامنے دیے گئے، کریکولم کے مطابق درست دائرہ کو پر کریں۔ **Invigilator Sign.** _____

Fill the relevant bubble against each question according to curriculum: **Candida**

Question		A	B	C	D
When energy flows from one trophic level to the next, the amount of energy lost is about:		10%	50%	90%	100%
The part involved in detoxification of drugs is:		P	Q	R	S

First Annual 2025 | Section A Q6 | 1 mark

The stem cells which can differentiate into few cell types are:	Totipotent	Unipotent	Pluripotent	Oligopotent

First Annual 2025 | Section B Q2(i) | 3 marks

(i)	How does Golgi complex play role in Cell secretion and Cell division?	03

First Annual 2025 | Section C Q5 | 6 marks

	initiation complex and elongation steps.	
Q.5	Describe the pathways involved in moving signals from outside to inside the cell with their diagrams.	**4+2**

First Annual 2025 | Section B Q2(vi) OR | 3 marks

OR	Write down any three roles of smooth endoplasmic reticulum in a cell.	**03**

First Annual 2025 | Section B Q2(vii) | 3 marks

(vii)	Peroxisomes are more abundant in liver cells. Justify.	**03**

First Annual 2025 | Section B Q2(xi) OR | 3 marks

OR	Why Lysosomes are also called suicidal bags?	**03**

Second Annual 2025 | Section B Q2(i) OR | 3 marks

(14 x 3 = 42)

(i)	How mitochondria developed according to endosymbiont theory? Briefly explain.	03	OR	Draw ultrastructure of an animal cell and label three organelles which are present only in animal cell.	03
(ii)	Compare amylase starch with amylopectin on the				

First Annual 2026 | Section A Q1 | 1 mark

Question	A	B	C	D	A	B	C	D
Which organelle is responsible for modifying and packaging proteins?	Ribosome	Golgi apparatus	Nucleus	Lysosome	◯	◯	◯	◯

First Annual 2026 | Section B Q2(i) | 3 marks

Differentiate between smooth and rough endoplasmic reticulum (any three points).	1x3

First Annual 2026 | Section C Q5 | 6 marks

Describe the structure and functions of mitochondria. Also draw suitable figure of mitochondria.	2+2 +2

First Annual 2026 | Section A Q1 | 1 mark

Smooth endoplasmic reticulum is mainly involved in:	Protein synthesis	DNA replication	Lipid synthesis	Respiration

First Annual 2026 | Section B Q2(i) OR | 3 marks

OR	State three structural features of mitochondria.	**1x3**

First Annual 2026 | Section C Q5 OR | 6 marks

OR	Describe the structure and functions of Golgi apparatus. Also draw a suitable figure of Golgi apparatus.	**2+2 +2**
	Draw events of non-cyclic photophosphorylation	

FBISE model paper | Section B Q2(i) | 3 marks

(i)	List any three organelles bounded by a single membrane and three organelles bounded by double membrane.	0.5x6

FBISE model paper | Section C Q3 | 6 marks

Q.3	Explain the structure and composition of fluid mosaic model of plasma membrane with diagram	4+2

First Annual 2025 | Section A Q1 | 1 mark

1.	Pick the organelle which is **NOT** membrane bounded:	Mitochondria	Endoplasmic reticulum	Nucleolus	Lysosome	○	○	○	○
2.	Which one of the following defines	Lysosomal aggregation	Multiple units of ribosomes	Attachment of many	Attachment of many	○	○	○	○

First Annual 2025 | Section B Q2(i) | 3 marks

(i)	Which organelle removes old and damaged mitochondria from cell? Give its name, and briefly explain the process.	03

First Annual 2025 | Section B Q2(iii) | 3 marks

(iii)	Where is the glyoxisome organelle found? State its role in those cell where it is found.	03

Second Annual 2025 | Section A Q1 | 1 mark

1.	The control center of the cell is:	Mitochondria	Nucleus	Ribosome	Chloroplast
2.	Which of the following is NOT				

Second Annual 2025 | Section A Q1 | 1 mark

1.	Resolution power of human naked eye is:	0.1 mm	0.1 cm	0.2 nm	0.2 μm

Second Annual 2025 | Section A Q2 | 1 mark

2.	Which one of the following is responsible for cyclosis?	Microtubule	Microfilament	Vimentin	Intermediate filament

Second Annual 2025 | Section B Q2(i) | 3 marks

(i)	Differentiate between resolution and magnification with examples.	1.5 +

Second Annual 2025 | Section B Q2(xiv) OR | 3 marks

OR	How do lysosomes act as Suicidal bags?	03

Second Annual 2025 | Section C Q3 | 7 marks

Q.3	Explain structure and function of mitochondria. Also draw suitable labeled sketch of Mitochondria.	3+2 +2

First Annual 2026 | Section B Q2(i) | 3 marks

(i)	Explain briefly any three types of stem cells.

First Annual 2026 | Section C Q3 | 7 marks

Q.3	Explain structure and functions of lysosomes. Also draw diagram of function of lysosomes.	2+3 +2

First Annual 2026 | Section B Q2(i) | 3 marks

(i)	Write the differences between primary and secondary cell wall based on the following criteria: a. Location b. Composition c. Nature	03
(ii)	How enzyme speed up the rate of reaction by	

Q.3	Explain intracellular digestion, Autophagy and autolysis by lysosomes along with diagram.	5+2

APOLLO

Enzymes

Domain F: Metabolism

FBISE model paper | Section A Q3 | 0.5 marks

3.	What will happen to reaction if available activation energy is decreased from optimum level?	Rate of reaction decreases	Rate of reaction increases	No effect on the rate of reaction	Reaction is stopped immediately

FBISE model paper | Section A Q35 | 0.5 marks

35.	The active site of an enzyme is the region where:	Products are stored	No charge is present	Non-competitive inhibitors are attached	Substrate binds specifically

FBISE model paper | Section A Q36 | 0.5 marks

36.	Activators differ from coenzymes because activators are:	Metallic ions	Polypeptide	Organic molecules	Amino acids

FBISE model paper | Section A Q37 | 0.5 marks

37.	In induced fit model, active site of enzyme:	Remains rigid	Changes shape to fit substrate	Breaks substrate randomly	Does not bind substrate

FBISE model paper | Section A Q38 | 0.5 marks

38.	Enzymes increase reaction rate without:	Changing substrate	Forming enzyme-substrate complex	Lowering activation energy	Being consumed in reaction

FBISE model paper | Section B Q3 | 4 marks

3.	Enlist any four hydrolytic enzymes responsible for breakdown of carbohydrates. Write their substrates and products as well.	1+1+1+1	OR	State four basic characteristics of Chordates.

First Annual 2025 | Section A Q8 | 1 mark

8.	The compound malonate is competitive inhibitor of:	Fumarate	Succinate	Succinic dehydrogenase	Histidine decarboxylase

First Annual 2025 | Section B Q2(i) OR | 3 marks

OR	Compare the characteristics of Cofactors of enzymes with one example of each.	**03**

(x)	Complete the table with reference to enzymes: **a** — Enzyme: ; Mechanism of action: Break large molecules with water; Example: ; **b** — Enzyme: Lyases; Mechanism of action: ; Example: ; **c** — Enzyme: ; Mechanism of action: ; Example: Cytochrome oxidase	**03**
(xi)	Illustrate the conversion of pyruvic acid to acetyl CoA as link reaction between glycolysis and Krebs cycle.	**03**
(xii)	Write difference in flower, stem and seed of dicots and monocots.	**03**
(xiii)	Elaborate the endosymbiont theory regarding evolution of chloroplast and mitochondria.	**03**
(xiv)	What are the limitations of Lamarckism?	**03**

SECTION – C

First Annual 2025 | Section C Q4 OR | 7 marks

	of electrons.	
OR	Explain mechanism of enzyme action through 'induced fit' and 'lock and key' models.	**4+3**

Second Annual 2025 | Section B Q2(iii) OR | 3 marks

(iii)	Distinguish between saturated and unsaturated fatty acids with examples.	**1.5 + 1.5**	**OR**	What are three types of cofactors? Give one example of each.	**1x3**
(iv)	Identify the role of active site of enzyme. Al				

Second Annual 2025 | Section B Q2(iv) | 3 marks

		1.5	
(iv)	Identify the role of active site of enzyme. Also mention its component parts.	1.5 + 1.5	OR

Second Annual 2025 | Section B Q2(v) | 3 marks

		1.5
(v)	Briefly explain importance of competitive inhibitors.	03

First Annual 2026 | Section A Q4 | 1 mark

The minimum energy required to start a chemical reaction is called:	Potential energy	Activation energy	Kinetic energy	Heat energy	◯	◯	◯	◯

First Annual 2026 | Section B Q2(ii) | 3 marks

Classify enzymes on the basis of the substrates they act upon, giving any three examples.	1x3

First Annual 2026 | Section B Q2(vii) | 3 marks

What is meant by minimum temperature? How it affects enzymatic action?	1+2

First Annual 2026 | Section A Q4 | 1 mark

Enzymes speed up reactions by:	Increasing activation energy	Decreasing activation energy	Consuming substrates	Changing products

First Annual 2026 | Section B Q2(ii) | 3 marks

Write any three examples of enzymes and their specific substrates.	1x3

First Annual 2026 | Section B Q2(vii) | 3 marks

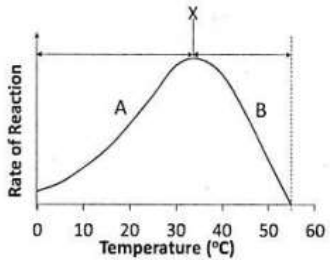
What is meant by maximum temperature. How it affects enzymatic action?	1+2

Q1. Fill the relevant bubble against each question according to curriculum. Each part carries one mark.

S #	Question	(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)
(i)	A certain poison disrupts the cytoskeleton of cell. Which of the following functions would be affected most probably by the poison?	Digestion within lysosomes	Protein synthesis	Cell division	Cellular respiration	○	○	○	○
(ii)	Identify hetero polysaccharide from the following:	Chitin	Glycogen	Pectin	Cellulose	○	○	○	○
(iii)	Glycolysis is a process that:	Produces ATP and NADH	Produces ATP only	Is not a net producer of energy rich molecules	Consumes as much ATPs as is produced	○	○	○	○
(iv)	What will happen to reaction if activation energy is decreased?	Rate of reaction decreases	Rate of reaction increases	No effect on the rate of reaction	Reaction is reversed	○	○	○	○

	bounded by double membrane.	
(ii)	Proteases are used in washing powders. How would it remove a blood stain on clothes? Why these washing powders are recommended for use at low temperatures?	3

FBISE model paper | Section B Q2(vii) | 3 marks

(vii)	The graph shows the effects of temperature on the rate of reaction of an enzyme.  (a) What is indicated by X? (b) What is happening in region A? (c) What is happening in region B?	1x3

First Annual 2025 | Section A Q5 | 1 mark

4.	Vitamin-A is an example of:	Steroids	Terpenes	Neutral lipid	Phospholipid	○	○	○	○
5.	What is an Apo enzyme?	It is the protein portion of an enzyme without cofactor	It is the non-protein part of an enzyme	It is a complete, biologically active enzyme	It is a prosthetic group attached to coenzyme	○	○	○	○
6.	Which one of these is **NOT** the product of								

First Annual 2025 | Section B Q2(iv) | 3 marks

(iv)	Why pepsinogen is secreted by stomach cells in inactive form? How it is activated then?	**03**

First Annual 2025 | Section B Q2(vii) OR | 3 marks

Depict the reaction of alcoholic fermentation done by yeast cell.	**03**
Why opportunistic diseases often attack the AIDS patients? Give any two examples of such diseases.	**03**
Differentiate between bacteria and cyanobacteria in terms of their photosynthetic properties.	**03**
Complete the table related to inhibitors: Name of inhibitor / Competitive or non-Competitive inhibitor / Name of enzyme inhibited Melonate Cyanide	**03**

Second Annual 2025 | Section A Q4 | 1 mark

structural component in plant cell walls?	Pectin	Cellulose	Glycogen	Chitin
Which model explains enzyme action by showing a change in the active site to fit the substrate?	Lock and Key Model	Induced Fit Model	Michaelis-Menten Model	Transition State Model

Second Annual 2025 | Section A Q6 | 1 mark

6. The specificity of enzyme is due to their:	Surface configuration	pH	Hydrogen bonding	High molecular weight
Which structure of the small intestine				

Second Annual 2025 | Section B Q2(ii) | 3 marks

(ii)	Compare 'Lock and Key model' and 'Induced Fit model' of enzyme action.	1.5 + 1.5

Second Annual 2025 | Section B Q2(iii) | 3 marks

(iii)	Why artificial sweeteners cannot be metabolized by enzymes of Human body? Justify.	03

Second Annual 2025 | Section B Q2(v) OR | 3 marks

OR	Briefly explain the effect of temperature on enzyme action. (No graph required)	03

First Annual 2026 | Section B Q2(ii) | 3 marks

(ii)	Classify any three enzymes and write one example of each on the basis of reaction they catalyze.	1x3

First Annual 2026 | Section B Q2(vii) | 3 marks

(vii)	What are non competitive irreversible inhibitors? Give one example along with its mode of action.	1.5 +

First Annual 2026 | Section B Q2(ii) | 3 marks

	c. Nature	
(ii)	How enzyme speed up the rate of reaction by lowering energy of activation? Explain through graph.	1+2

First Annual 2026 | Section B Q2(viii) | 3 marks

(viii)	Irreversible non-competitive inhibition is more dangerous than feedback mechanism. Justify the statement with one example.	2+1
(ix)	Why plants and algae are believed to have	

APOLLO

Bioenergetics

Domain F: Metabolism

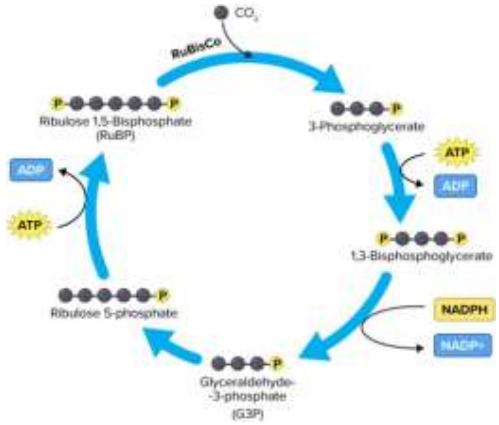
FBISE model paper | Section A Q44 | 0.5 marks

44.	Which of the following molecules is the source of oxygen released during photosynthesis?	Water	Glucose	Carbon dioxide	ATP

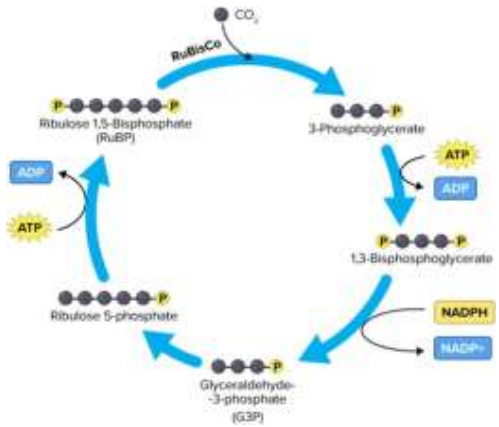
FBISE model paper | Section A Q49 | 0.5 marks

49.	At which step of the Krebs cycle, substrate level phosphorylation occurs:	Oxaloacetate to citrate	Isocitrate to α-ketoglutarate	Succinyle Co-A to Succinate	Fumarate to Malate

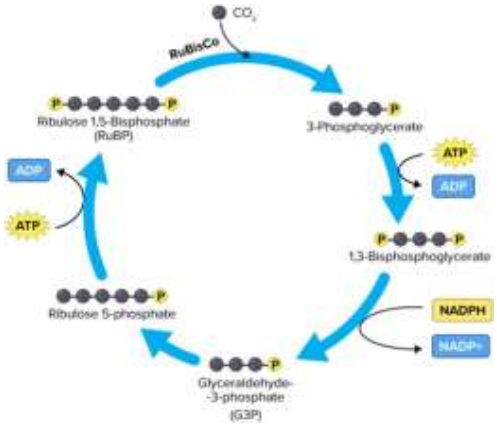
FBISE model paper | Section A Q77 | 0.5 marks

Scenario for MCQ# 77 to 80	**Following is a metabolic pathway that occurs during dark reaction of photosynthesis. It involves the fixation of carbon dioxide to make carbohydrates**  				
77.	The first phase of this cycle is called carbon fixation because during this phase:	Carbon dioxide acceptor is regenerated	inorganic carbon becomes the part of organic compound	Inorganic carbon of carbon dioxide is reduced	Inorganic carbon of carbon dioxide is oxidized

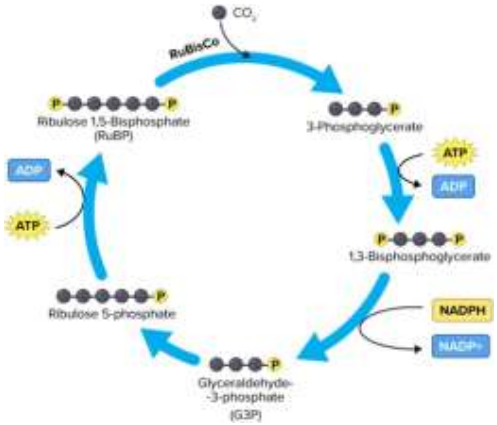
FBISE model paper | Section A Q78 | 0.5 marks

Scenario for MCQ# 77 to 80	**Following is a metabolic pathway that occurs during dark reaction of photosynthesis. It involves the fixation of carbon dioxide to make carbohydrates**  				
78.	What is/are the output(s) of this cycle?	three molecules of RuBP	six molecules of G3P	one molecule of G3P	Two molecules of NADPH

FBISE model paper | Section A Q79 | 0.5 marks

Scenario for MCQ# 77 to 80	**Following is a metabolic pathway that occurs during dark reaction of photosynthesis. It involves the fixation of carbon dioxide to make carbohydrates** 				
79.	Which metabolite of this cycle, sometime react with oxygen because its enzyme sometime act as oxygenase?	Ribulose 1,5-Bisphosphate	Glyceraldehyde-3-Phosphate	3-Phosphoglycerate	Ribulose phosphate

FBISE model paper | Section A Q80 | 0.5 marks

Scenario for MCQ# 77 to 80	**Following is a metabolic pathway that occurs during dark reaction of photosynthesis. It involves the fixation of carbon dioxide to make carbohydrates** 				
80.	This cycle is found in:	some C3 plants	some C4 plants	all C3 plants	all C3 and C4 plants

1+1+1+1	OR	The Calvin cycle (dark reaction) requires 9 ATP molecules and 6 NADPH molecules to produce one molecule of G3P. Why can non-cyclic photophosphorylation alone *not* satisfy this specific ratio, and how does the chloroplast resolve this deficit during the light reaction?	2+2

8.	How components of respiratory electron transport chain (ETC) are involved in ATP generation and trace the passage of electrons through ETC by drawing the labelled diagram.	4+2	OR	Draw and describe the chemical structure of following polysaccharides: starch, glycogen, cellulose and chitin.

First Annual 2025 | Section B Q2(v) | 3 marks

(v)	Why and how cyclic Photophosphorylation occurs in light reactions?	**1+2**

First Annual 2025 | Section B Q2(xi) | 3 marks

(xi)	Illustrate the conversion of pyruvic acid to acetyl CoA as link reaction between glycolysis and Krebs cycle.	**03**

First Annual 2025 | Section C Q4 OR | 7 marks

OR	How electrons move through electron transport chain till they reach final acceptor? Explain. Draw diagram of electron transport chain.	**5+2**
	Elaborate the structures and roles of steroids and	

First Annual 2025 | Section B Q2(ix) | 3 marks

(ix)	Differentiate between absorption spectrum of Chlorophyll– a, b and Carotenoids.	**03**

First Annual 2025 | Section B Q2(vii) OR | 3 marks

OR	Outline the process of non-cyclic photophosphorylation with the help of a labelled flow sheet.	**03**
	Following is the diagram of	

First Annual 2025 | Section C Q3 OR | 7 marks

OR	Explain how the movement of protons across mitochondrial membrane is involved in ATP synthesis. Also draw diagram showing movement of electrons.	**5+2**
	Explain mechanism of enzyme action through	

Second Annual 2025 | Section B Q2(vi) | 3 marks

(vi)	Briefly explain three steps of oxidation of pyruvate into acetyl Co-A.	1x3	OR

Second Annual 2025 | Section B Q2(x) OR | 3 marks

(x)	Illustrate with diagrams three types of rod shape bacteria.	1x3	OR	Draw a labeled Calvin cycle.	1.5 2+1

Second Annual 2025 | Section C Q3 OR | 7 marks

Q.3	Explain formation and functions of lysosomes with suitable sketch	**2+3 +2**	**OR**	Draw pay off phase of Glycolysis pathway and explain its steps.	**2+5**

First Annual 2026 | Section A Q3 | 1 mark

During anaerobic respiration in human muscles, pyruvate is converted into:	Ethanol	Carbon dioxide	Lactic acid	Glucose	◯	◯	◯	◯

First Annual 2026 | Section B Q2(ii) OR | 3 marks

	[illegible]	
OR	Outline steps of preparatory phase of glycolysis.	03

First Annual 2026 | Section B Q2(xiii) OR | 3 marks

[illegible]	
State three roles of ATP-Synthetase during chemiosmosis.	1x3

First Annual 2026 | Section C Q6 | 6 marks

Draw events of non-cyclic photophosphorylation and explain absorption of light by PS-II and chemiosmotic synthesis of ATP during light reaction.	2+2 +2

HA-I 26006 (B)

First Annual 2026 | Section A Q3 | 1 mark

End product of anaerobic respiration in yeast is:	Lactic acid	Water	Oxygen	Ethanol

First Annual 2026 | Section B Q2(ii) OR | 3 marks

OR	Outline steps of payoff phase of Glycolysis.	**03**

First Annual 2026 | Section B Q2(xiii) OR | 3 marks

OR	Write down composition and roles of parts of ATP synthetase.	**03**

First Annual 2026 | Section C Q6 OR | 6 marks

	apparatus.	
OR	Draw events of non-cyclic photophosphorylation and explain absorption of light by PS-I and electron flow from PS-I to $NADP^+$.	2+2 +2

FBISE model paper | Section A Q1(iii) | 1 mark

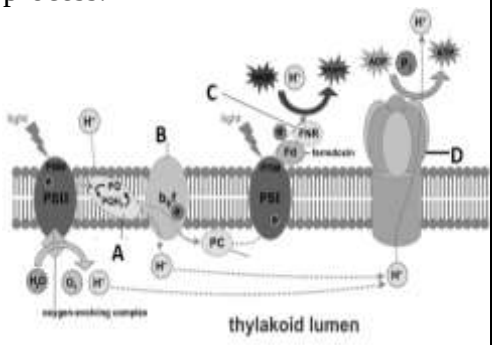
Q1. Fill the relevant bubble against each question according to curriculum. Each part carries one mark.

S #	Question	(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)
(i)	A certain poison disrupts the cytoskeleton of cell. Which of the following functions would be affected most probably by the poison?	Digestion within lysosomes	Protein synthesis	Cell division	Cellular respiration	○	○	○	○
(ii)	Identify hetero polysaccharide from the following:	Chitin	Glycogen	Pectin	Cellulose	○	○	○	○
(iii)	Glycolysis is a process that:	Produces ATP and NADH	Produces ATP only	Is not a net producer of energy rich molecules	Consumes as much ATPs as is produced	○	○	○	○

FBISE model paper | Section B Q2(ii) OR | 3 marks

	A scientist is trying to find best light colour for maximum yield. Which type of spectrum graph will he refer? Give reason.	3

FBISE model paper | Section B Q2(xiii) OR | 3 marks

OR	In the following diagram a segment of thylakoid membrane is depicted showing an important metabolic process.  Name the parts labelled as A, B, C and D. Explain the function of D.	2+1

OR	What are the events that capture light and convert it into chemical energy during light dependent non-cyclic reactions?	6

First Annual 2025 | Section A Q6 | 1 mark

		coractor		enzyme	coenzyme				
6.	Which one of these is **NOT** the product of light reaction?	Oxygen	NADPH	ATP	Glucose	◯	◯	◯	◯
	The TCA cycle starts with the condensation								

First Annual 2025 | Section A Q7 | 1 mark

	light reaction?					◯	◯	◯	◯
7.	The TCA cycle starts with the condensation of oxaloacetate with:	Citrate	Acetyl group	Ethanol	Pyruvate	◯	◯	◯	◯
	Which two hepatitis are transmitted through	Hepatitis A &	Hepatitis B &	Hepatitis A &	Hepatitis C &				

First Annual 2025 | Section B Q2(iv) OR | 3 marks

Depict the reaction of alcoholic fermentation done by yeast cell.	03

First Annual 2025 | Section B Q2(v) | 3 marks

(v)	How chemiosmosis is done in chloroplast?	03

First Annual 2025 | Section C Q3(ab) | 7 marks

Q.3	**a)** Explain the detail structure of chloroplast, and show arrangement of photosynthetic pigment in it. **b)** Draw only label sketch of C3 cycle.	4+3
Q.4	a) How stomach function is regulated by nervous	

Second Annual 2025 | Section A Q5 | 1 mark

				model	
5.	Which of the following best describes the role of ATP synthase in cellular respiration?	Splits glucose into pyruvate	Transports electrons along ETC	Utilizes proton gradient to form ATP	Transfers acetyl group to oxaloacetate
6.	HIV primarily attacks which type of human	Red blood	B	T helper	

Second Annual 2025 | Section A Q8 | 1 mark

	absorption of digested food				
8.	In C_3 plants first stable product of photosynthesis during dark reaction is:	PGA	G_3P	RUBP	Oxaloacetate

Second Annual 2025 | Section C Q3 OR | 7 marks

3+2 +2	OR	Draw labelled Calvin Cycle. Explain regeneration of RUBP only.	4+3

First Annual 2026 | Section B Q2(ii) OR | 3 marks

	a. Strobilus b. Circinate vernation	
OR	Why absorption spectrum of 'chlorophyll **a**' is different from absorption spectrum of 'chlorophyll **b**'?	03
	Why did Hershey and Chase label one batch of	

First Annual 2026 | Section B Q2(xiii) OR | 3 marks

	answer with suitable example.	
OR	Compare cyclic and noncyclic phosphorylation (any three points).	1x3

First Annual 2026 | Section C Q6 OR | 6 marks

OR	Draw and describe steps of citric acid cycle.	3+3

Describe three steps for conversion of pyruvate into acetyl CoA.	03

APOLLO

Reproduction

Domain H: Reproduction and Inheritance

FBISE model paper | Section A Q14 | 0.5 marks

14.	Ovulation is stimulated by the sharp increase of which of the following hormones?	FSH	Estrogen	LH	Progesterone

FBISE model paper | Section A Q51 | 0.5 marks

51.	In which structure of human reproductive system, sperms are stored and get mature?	Seminiferous tubules	Prostate gland	Vas deferens	Epididymis

FBISE model paper | Section A Q52 | 0.5 marks

52.	Which of the following is the function of testosterone?	Matures ova	Develops male secondary sex characteristics	Regulates menstruation	Stimulates LH/ICSH release

FBISE model paper | Section A Q53 | 0.5 marks

53.	In humans, the uterus mainly functions to/as:	Produce ova	Site of fertilization	Store sperms	Implant and nourish the embryo

FBISE model paper | Section A Q54 | 0.5 marks

54.	A gynecologist observes in the report of a patient that there is no LH peak during her menstrual cycle. She concluded that the directly affected process is:	Ovulation	Menstruation	Fertilization	Implantation

FBISE model paper | Section B Q6 | 4 marks

6.	Draw a flow chart of hormonal control of human male reproductive system showing positive and negative feedback.	4

First Annual 2025 | Section A Q3 | 1 mark

The **main function** of progesterone in human female reproductive system is:	Ovulation	Follicle development	Endometrium development	Implantation of embryo

First Annual 2025 | Section B Q2(iv) | 3 marks

(iv)	List the Accessory glands associated with male reproductive system with their respective locations.	**03**

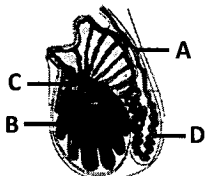
First Annual 2025 | Section B Q2(viii) OR | 3 marks

	examples.	
OR	Write about the structure and functions of ovary and oviduct in female reproductive system.	**2+1**

First Annual 2025 | Section B Q2(i) | 3 marks

SECTION – B (Marks 42)

Q. 2 Answers the following parts briefly. **(14 x 3 =**

(i)	The diagram shows the section through testis: **a)** Identify the parts A & B. **b)** Write functions of C & D. **c)** What is the function of inhibin hormone in males?		**1x3**	**OR**	Write the major points of theory of natural selection. (Any three)

First Annual 2025 | Section B Q2(xiii) | 3 marks

(xiii)	Write about the structure and function of each of the three layers of uterus.	**03**

Second Annual 2025 | Section B Q2(iv) OR | 3 marks

		1.5			
(iv)	Identify the role of active site of enzyme. Also mention its component parts.	**1.5 + 1.5**	**OR**	Briefly explain hormonal control of Sperm production in negative feedback system.	**03**
(v)	Briefly explain importance of competitive inhibit				

First Annual 2026 | Section A Q15 | 1 mark

Menstrual cycle is controlled by:	Enzymes	Vitamins	Minerals	Hormones	◯	◯	◯	◯

First Annual 2026 | Section B Q2(ix) OR | 3 marks

OR	State three events of menstrual phase of menstrual cycle.	**1x3**

First Annual 2026 | Section B Q2(ix) | 3 marks

Name three Hormones of male reproductive system and write role of each Hormone.	**1x3**	**OR**	State three events of menstrual phase of menstrual cycle.

First Annual 2026 | Section A Q15 | 1 mark

Ovulation occurs around:	Day 1	Day 7	Day 14	Day 28

First Annual 2026 | Section B Q2(ix) OR | 3 marks

OR	State three events of secretory phase of menstrual cycle.	**1x3**

First Annual 2026 | Section B Q2(ix) | 3 marks

(ix)	Enlist names and location of three accessory glands of male reproductive system.	**1x3**

FBISE model paper | Section A Q1(xv) | 1 mark

(xv)	Ovulation is stimulated by the sharp increase of which of the following hormone?	SH	Estrogen	LH	Progesterone

FBISE model paper | Section B Q2(ix) OR | 3 marks

Corpus luteum acts as an endocrine gland, a) Where it is located? b) When it is formed? c) Which hormone is secreted by it	3

FBISE model paper | Section B Q2(ix) | 3 marks

(ix)	Complete the given table according to structures and functions of male reproductive systems.	3

Structure	**Function**
Epididymis	.
	Testosterone production

Second Annual 2025 | Section A Q12 | 1 mark

12.	Which hormone regulates the development of male secondary sexual characteristics?	Testosterone	Progesterone	Estrogen	FSH

OR	Write down names and functions of any three hormones involved in menstrual cycle.	1x3