APOLLO

FBISE Biology Class 11
Topical workbook - Volume 1 of 4

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

APOLLO

Evolution

Domain B: Evolution and Biodiversity Classification

FBISE model paper | Section A Q15 | 0.5 marks

15.	All organisms share the same genetic code. This commonality is evidence that:	All organisms are descended from common ancestor	Convergent evolution has occurred	Evolution is occurring now	Evolution occurs gradually

FBISE model paper | Section A Q45 | 0.5 marks

45.	While studying the anatomy of forelimbs of humans and wings of bats it was observed that they are:	Analogous organs	Homologous organs	Vestigial organs	Identical organs

FBISE model paper | Section A Q46 | 0.5 marks

46.	The theory of Lamarckism has been rejected because:	It did not explain the evolution	It did not explain the origin of life	All acquired traits are not heritable	It was limited to giraffes and snakes only

FBISE model paper | Section A Q47 | 0.5 marks

47.	According to endosymbiotic theory, mitochondria originated from:	Bacteria	Viruses	Unicellular protozoans	Unicellular algae

FBISE model paper | Section B Q6 OR | 4 marks

OR	Explain the evolution of giraffe neck according to Darwin's theory of evolution by natural selection.	4

First Annual 2025 | Section A Q17 | 1 mark

17.	Which of the following is an example of **homologous organs**?	Wing of an insect & a bird	Forelimb of human & wing of a bat	Wing of an insect & a bat	Gills of fish & lungs of mammals

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

OR	Molecular biology provides evidence of evolution. Justify the statement with reference to any three examples.	**03**

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

(xiii)	Elaborate the endosymbiont theory regarding evolution of chloroplast and mitochondria.	**03**

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

(xiv)	What are the limitations of Lamarckism?	**03**

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

	Write the major points of theory of natural selection. (Any three)	
OR		**03**

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

(iv)	What are the homologous organs? Write an example. Which type of evolution is caused by them?	**1x3**
(v)	Complete the table:	

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

	each type. (Any three)	
OR	How evolution of Giraffe neck can be explained on the basis of Lamarckism?	**03**

Second Annual 2025 | Section B Q2(i) | 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

First Annual 2026 | Section A Q16 | 1 mark

Molecular evidence of evolution is obtained from:	DNA analysis	Embryology	Anatomy	Fossils	◯	◯	◯	◯

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

(xii)	Briefly elaborate three drawbacks of Larmarckism.	1x3

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

Differentiate between convergent and divergent evolution. (Three points)	1x3	OR

First Annual 2026 | Section A Q16 | 1 mark

Which molecule provides strong evidence for evolution due to similarity among species?	DNA	Lipids	Carbo-hydrates	Minerals

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

OR	Briefly explain origin of mitochondria and chloroplasts as explained by Endosymbiotic theory.	1.5 + 1.5

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

(xii)	Give one example each supporting use and disuse of organs according to Lamarck theory.	1.5 + 1.5
xiii)	Compare homologous and analogous	

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

xiii)	Compare homologous and analogous structures. (three points)	1x3

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

(xvi)	All organisms share the same genetic code. This commonality is evidence that:	Evolution is occurring now	Convergent evolution has occurred	All organisms are descended from common ancestor	Evolution occurs gradually

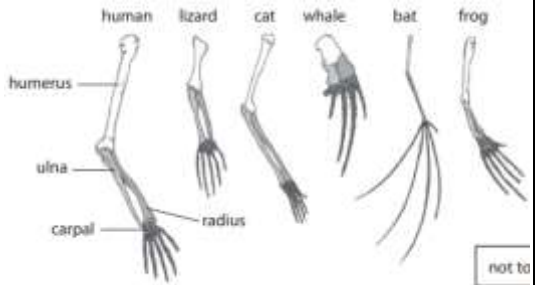
FBISE model paper | Section B Q2(vii) OR | 3 marks

Name the more scientifically acceptable theory explaining evolution of eukaryotes from prokaryote and give salient points of that theory.	0.5x6

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

(xii)	State Lamarck's assumptions for the explanation of evolution.	3

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

(xiii)	Diagram shows the fore limb of different vertebrates. Evolutionists believe that all these vertebrates evolved from one common origin. Describe the evolutionary evidence that support this belief.  	3

Second Annual 2025 | Section A Q16 | 1 mark

	replication was experimentally proven by:	Crick	Chase	Stahl	Griffith
16.	The presence of wings in bats and insects, used for flight but with different structural origins, is an example of:	Homologous structures	Analogous structures	Vestigial structures	Adaptive radiation
	Animal in which blastopore develops into				

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

OR	Which type of evolution is indicated by the presence of homologous organs in organisms? Explain your answer with suitable example.	**1x3**
	Compare cyclic and noncyclic phosphorylation (any	

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

(xii)	How does endosymbiont theory explain the origin of eukaryotic cells from prokaryotic cells?	**03**

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

(xiii)	How does biogeographical distribution of organisms validate theory of evolution?	03

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Plantae

Domain B: Evolution and Biodiversity Classification

FBISE model paper | Section A Q10 | 0.5 marks

10.	Which of the following is **NOT** common to all divisions of vascular plants?	Development of seeds	Alternation of generations	Presence of xylem and phloem	Dominance of diploid generation

FBISE model paper | Section A Q48 | 0.5 marks

48.	Vascular plants differ from non-vascular plants by:	Absence of roots	Presence of dominant sporophyte	Absence of seed	Presence of dominant gametophyte

FBISE model paper | Section A Q50 | 0.5 marks

50.	Which exclusive feature justifies that the mango is an angiospermic plant?	Presence of seeds	Presence of flowers and fruits	Presence of micro and megaspores	Presence of vascular bundles

FBISE model paper | Section B Q4 | 4 marks

products as well.

4.	Write any four general features of non-vascular plants.	1+1+1+1	OR	State the two steps involved in nitrification (a phase of nitrogen

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

(ii)	Write any three main features of Bryophytes.	03

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

(xii)	Write difference in flower, stem and seed of dicots and monocots.	03

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

	specific role?	
OR	Write characteristics of angiosperms with reference to vascular tissues and alternation of generation.	**03**

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

	which occur during mRNA processing.	
OR	Write any three distinguishing characteristics of vascular plants.	**03**

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

(ii)	Compare any three adaptations for osmotic adjustments in hydrophytes and mesophytes.	**03**
(iii)	Write about the structure of prions. Enlist two diseases caused by them.	**2+1**
(iv)	What are the homologous organs? Write an example. Which type of evolution is caused by them?	**1x3**
(v)	Complete the table:	**03**

	Group	Character	Example
a)	Bryophytes		
b)		Seedless plants	
c)			Rose

(vi)	Write the difference between leaf, seed and root of monocots and dicots.	**03**

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

	Write the difference between leaf, seed and root of monocots and dicots.	**03**

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

(ii)	Compare amylase starch with amylopectin on the basis of structures, linkage and solubility.	1x3	OR	Briefly describe the composition and role of 'capsule' in bacterial cell.	2+1
(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. 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 inhibitors.	03	OR	Complete the table:	03
(vi)	Briefly explain three steps of oxidation of pyruvate			Why are the changes of	

Specimen	Name of sub-division	One special characteristic
Rhynia		
Lycopodium		
Equisetum		

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

(xiv)	Describe any three general features of vascular plants.	1x3	OR

First Annual 2026 | Section A Q11 | 1 mark

Example of vascular plant:	Fern	Algae	Moss	Fungi	◯	◯	◯	◯

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

OR	State any three general characteristics of Whisk Ferns.	1x3

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

(vi)	Give three characteristics of bryophytes.	1x3

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

OR	Describe three characteristics of angiosperms, that make them successful land plants.	03

First Annual 2026 | Section A Q11 | 1 mark

11.	Which group includes enclosed seed plants?	Gymno-sperms	Fern	Bryophytes	Angiosperm

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

State any three general characteristics of club mosses.	1x3

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

(vi)	Why are bryophytes called amphibious plants. Give three reasons.	1x3

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

OR	Give three differences between monocots and dicots.	1x3

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

(xi)	Which of the following is not common to all divisions of vascular plants?	Development of seeds	Alternation of generations	Xylem and phloem	Dominance of diploid generation

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

List six features of seedless vascular plants.	0.5x6

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

	and phototropism.	
(vi)	List six features of Bryophytes which helped them to adapt land habitat.	0.5x6

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

OR	Give three unique features of angiosperms and their benefits.	3

First Annual 2025 | Section A Q11 | 1 mark

			phase	hyphae	reproduction				
11.	Dominant gametophyte and dependent sporophyte is found in:	Bryophytes	Pteridophytes	Gymnosperms	Angiosperms	◯	◯	◯	◯
	Both radial and bilateral symmetries are								

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

Give any three differences between naked seed plants and enclosed seed plants.	03

First Annual 2025 | Section C Q4 OR | 7 marks

system.	
Explain the life cycle of fern plant. Show the alternation of generation with the help of diagram.	5+2

Second Annual 2025 | Section A Q9 | 1 mark

	ecological relationship?		salism	Competition	Mutualism
9.	Which group of plants is characterized by the absence of vascular tissue?	Pteridophytes	Gymnosperms	Angiosperms	Bryophytes
	Which plant tissue is responsible for				

Second Annual 2025 | Section A Q15 | 1 mark

15.	Whisk ferns belong to group:	Pteropsida	Cycas	Psilopsida	Lycopsida

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

(vi)	Draw labeled life cycle of ferns.	2+1

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

1.5 + 1.5	OR	Briefly explain any three adaptations of bryophytes for terrestrial life.	03

Second Annual 2025 | Section C Q6 | 6 marks

Q.6	Describe in detail any six differences between monocots and dicots with reference to their structural and reproductive features.	06

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

Briefly describe following characteristic of pteridophytes: a. Strobilus b. Circinate vernation	1.5 + 1.5
Why absorption spectrum of 'chlorophyll a' is	

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

	reference to phytochromes.	
(vi)	Write unique characteristics of bryophytes not represented by other land plants. (Any three)	1x3

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

	Eukaryotes?	
OR	Write any three characteristics of angiosperms.	03

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

(iv)	Give any three land adaptations shown by bryophytes.	1x3

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

OR	How female gametophyte is formed in angiosperms?	03

	b. Electron flow from PS-II-PS-I	
Q.6	Differentiate between monocots and dicots plants. (give at least five differences and one example)	5+1

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Animalia

Domain B: Evolution and Biodiversity Classification

FBISE model paper | Section A Q11 | 0.5 marks

11.	All organ systems are less developed in parasitic flatworms **EXCEPT**:	Circulatory system	Digestive system	Reproductive system	Respiratory system

FBISE model paper | Section A Q18 | 0.5 marks

18.	An organism with jointed appendages and exoskeleton belongs to:	Mollusca	Arthropoda	Annelida	Echinodermat a

FBISE model paper | Section A Q20 | 0.5 marks

20.	Chordates are characterized by:	Absence of backbone	Presence of notochord at some stage	Absence of symmetry	Presence of exoskeleton

FBISE model paper | Section B Q3 OR | 4 marks

1+1+1+1	OR	State four basic characteristics of Chordates.	1+1+1+1

First Annual 2025 | Section A Q15 | 1 mark

15.	Which of the following structure is common to all chordate embryo?	Placenta	Notochord	Vertebral column	Lungs

OR	Write three distinguishing characteristics and one example of each of the phylum Cnidaria Arthropoda and Mollusca.	**2x3**

First Annual 2025 | Section C Q6 OR | 6 marks

	c) Help organisms to live under ice	
OR	Write three distinguishing characteristics and one example of each of the phylum Porifera, Platyhelminthes and Annelida.	**2x3**

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

(xi)	Enlist any six stages of endospore formation in bacteria as a mechanism of survival to withstand unfavourable conditions.	**03**	**OR**	Classify animals on the basis of Body cavity with one example of each.	**1x3**

First Annual 2026 | Section A Q12 | 1 mark

Which phylum includes animals with jointed appendages?	Arthropoda	Annelida	Mollusca	Echinoder-mata	◯	◯	◯	◯

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

Describe any three general characteristics of sponges.	1x3

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

State three characteristics which are common in all chordates.	1x3

First Annual 2026 | Section A Q12 | 1 mark

Which animal group has a water vascular system?	Arthropods	Molluscs	Echinoderms	Annelids

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

(iii)	State three characteristics of cnidarians.	1x3

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

What is notochord? What is fate of notochord in all vertebrates?	1+2

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

(iii)	Why Echinoderms are considered close to Chordates although they have many simplest systems? Give three reasons.	3

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

All chordates go through few similar stages in life. Summarize any three of them.	3

First Annual 2025 | Section A Q12 | 1 mark

	sporophyte is found in:		phytes			○	○	○	○
12.	Both radial and bilateral symmetries are found in phylum:	Porifera	Cnidaria	Mollusca	Echinodermata	○	○	○	○
		Increasing	Increasing		Keeping				

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

	What are the acoelomate, pseudoceolomate and coelomate animals? Mention at least one animal each belonging to each group.	03

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

(xi)	What advancements are shown by reptile over amphibians?	03

First Annual 2025 | Section C Q6 OR | 6 marks

Write down the general characteristics of pouched and placental mammals and give their examples.	06

Second Annual 2025 | Section A Q11 | 1 mark

transport of sugars?			Sclerenchyma	Sclerenchyma
Which phylum is characterized by a water vascular system used in locomotion and feeding?	Annelida	Arthropoda	Mollusca	Echinodermata

Second Annual 2025 | Section A Q16 | 1 mark

16. Which of the following is deuterostome?	Mollusks	Annelids	Echinoderma-tes	Arthropods

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

Briefly explain any three evolutionary adaptations in class Aves.	1x3

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

(vii)	Differentiate between diploblastic and triploblastic animals with examples.	1.5 + 1.5	OR	Brierly describe the types of heterotrophic nutrition in bacteria.	1.5 + 1.5

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

(iii)	Write down three general characteristics shared by all chordates.	1x3

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

(xiv)	Write down any three distinguishing features of cnidaria.	03

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

How members of mycorrhizae benefit from each other? Also write difference between types of mycorrhizae.	1+2
Complete the table: Mollusca / Platyhelm-inthes / Echino-dermata Symmetry Body cavity Write any three osmotic adaptations of	03

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

(x)	Write any three distinguishing features of phylum Arthropoda that make it different from other phylum.	1x3

OR	Explain seven features of phylum Cnidaria.	1x7

APOLLO

Molecular Biology

Domain C: Molecular Biology

FBISE model paper | Section A Q2 | 0.5 marks

2.	Identify heteropolysaccharide from the following:	Chitin	Glycogen	Pectin	Cellulose

FBISE model paper | Section A Q7 | 0.5 marks

7. Which column in the given table contains the correct chemical composition of acylglycerols?

Substances	A	B	C	D
Amino acid	✓	x	x	x
Glucose	x	x	✓	✓
Fatty acid	x	✓	x	x
Glycerol	x	✓	x	x

FBISE model paper | Section A Q17 | 0.5 marks

17.	Phospholipids are ideal for membranes because they are composed of:	Hydrophilic head and tail	Hydrophobic head and tail	Hydrophobic head and Hydrophilic tail	Hydrophilic head and Hydrophobic tail

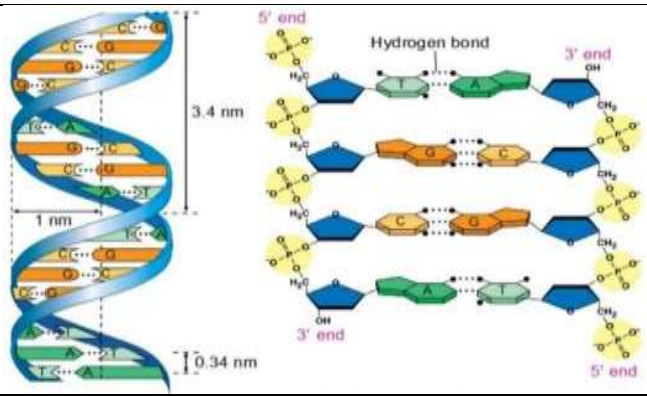
FBISE model paper | Section A Q19 | 0.5 marks

19.	A nucleotide is composed of:	Sugar + base + phosphate	Amino acid + base + phosphate	Lipid + sugar + phosphate	Protein + base + phosphate

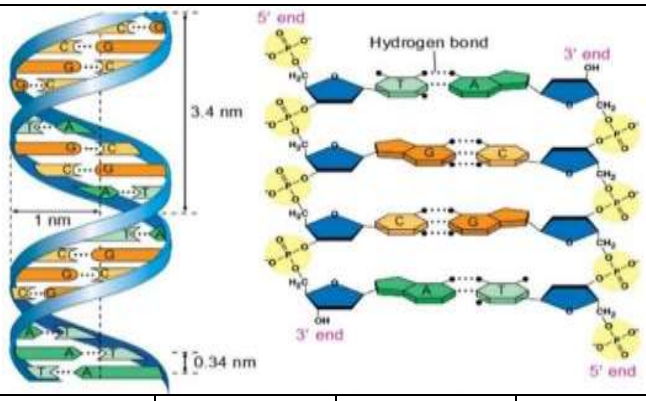
FBISE model paper | Section A Q24 | 0.5 marks

24.	During protein synthesis, the RNA that carries amino acids to the ribosome is:	Messenger RNA	Ribosomal RNA	Transfer RNA	Ribozyme RNA

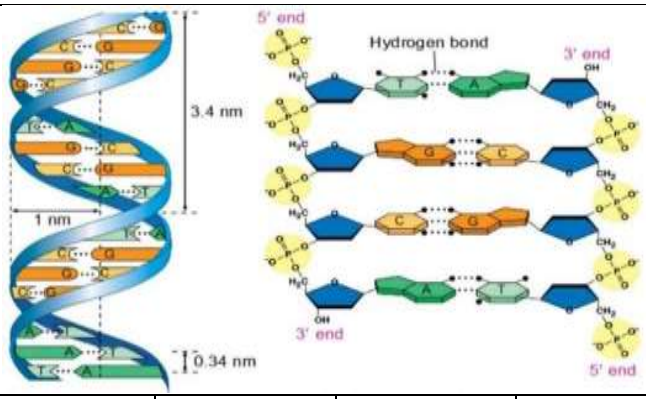
FBISE model paper | Section A Q65 | 0.5 marks

Scenario for MCQ# 65 to 68	**DNA is a double helical molecule that consists of two anti parallel, complementary polynucleotide chain. Following is a short stretch of long DNA molecule. Each turn of the DNA helix is 3.4 nm long and comprises 10 base pairs.**					
						
65.	What will be the length of the DNA if it consists of 100 turns?	0.34 nm	3.4 nm	34 nm	340 nm	

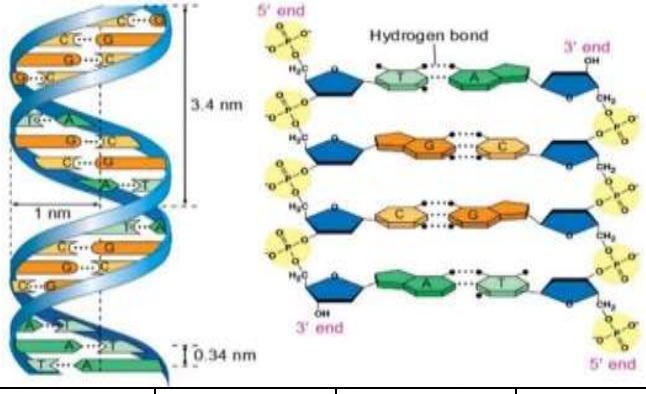
FBISE model paper | Section A Q66 | 0.5 marks

Scenario for MCQ# 65 to 68		**DNA is a double helical molecule that consists of two anti parallel, complementary polynucleotide chain. Following is a short stretch of long DNA molecule. Each turn of the DNA helix is 3.4 nm long and comprises 10 base pairs.**				
						
65.	What will be the length of the DNA if it consists of 100 turns?	0.34 nm	3.4 nm	34 nm	340 nm	
66.	How many base pairs would be present in the DNA if it consists of 100 turns?	10	100	340	1000	

FBISE model paper | Section A Q67 | 0.5 marks

Scenario for MCQ# 65 to 68		**DNA is a double helical molecule that consists of two anti parallel, complementary polynucleotide chain. Following is a short stretch of long DNA molecule. Each turn of the DNA helix is 3.4 nm long and comprises 10 base pairs.**				
						
65.	What will be the length of the DNA if it consists of 100 turns?	0.34 nm	3.4 nm	34 nm	340 nm	
66.	How many base pairs would be present in the DNA if it consists of 100 turns?	10	100	340	1000	
67.	If the amount of adenine in this DNA is 16% of total nitrogenous bases, what would be the amount of cytosine?	16%	32%	34%	84%	

Scenario for MCQ# 65 to 68	**DNA is a double helical molecule that consists of two anti parallel, complementary polynucleotide chain. Following is a short stretch of long DNA molecule. Each turn of the DNA helix is 3.4 nm long and comprises 10 base pairs.**



65.	What will be the length of the DNA if it consists of 100 turns?	0.34 nm	3.4 nm	34 nm	340 nm	
66.	How many base pairs would be present in the DNA if it consists of 100 turns?	10	100	340	1000	
67.	If the amount of adenine in this DNA is 16% of total nitrogenous bases, what would be the amount of cytosine?	16%	32%	34%	84%	
68.	How many hydrogen bonds would be present in the DNA if it consists of 100 turns and 50% base pairs are G-C base pairs?	100	1000	2500	3000	

FBISE model paper | Section C Q8 OR | 6 marks

4+2	OR	Draw and describe the chemical structure of following polysaccharides: starch, glycogen, cellulose and chitin.	1.5+1.5+ 1.5+1.5

First Annual 2025 | Section A Q7 | 1 mark

7.	The protein present in tendons and ligaments is:	Casein	Keratin	Elastin	Fibrinogen

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

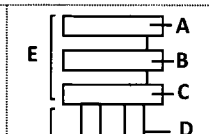
(iii)	Justify the statement “Water is a universal solvent”.	**03**

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

OR	How is maltose different from sucrose in glycosidic linkage, monosaccharide units and specific role?	**1x3**

	diagram of electron transport chain.	
OR	Elaborate the structures and roles of steroids and prostaglandins as important group of lipids.	**3+3**

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

(iv)	What are the homologous organs? Write an example. Which type of evolution is caused by them?	**1x3**	**OR**	Write any three chemical metho mechanisms used to control bacter
(v)	Complete the table: **a)** Bryophytes **b)** Seedless plants **c)** Rose (Group / Character / Example)	**03**	**OR**	Name the type of pattern of sex de humans. Also write mechani determination in man.
(vi)	Write the difference between leaf, seed and root of monocots and dicots.	**03**	**OR**	Write down any three roles endoplasmic reticulum in a cell.
(vii)	Peroxisomes are more abundant in liver cells. Justify.	**03**	**OR**	Outline the process of photophosphorylation with the help flow sheet.
(viii)	The diagram shows molecule of Lecithin: **a)** Identify parts A, B, C & D. **b)** Mention the polarity of E & F. 	**2+1**	**OR**	Following is the diagram of HIV: **a)** Identify the parts A, B & C. **b)** Write the functions of protein gp40, gp120 and A B

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

(xi)	How are Starch and Glycogen different from each other although both are polysaccharides?	**03**

First Annual 2025 | Section C Q5 OR | 6 marks

OR	Identify and explain the properties of water which enable it to: **a)** Act as temperature stabilizer **b)** Help organisms to live in warm environment **c)** Help organisms to live under ice	**2x3**
	Write three distinguishing characteristics and one	

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

(ii)	Compare amylase starch with amylopectin on the basis of structures, linkage and solubility.	**1x3**	**OR**

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

(iii)	Distinguish between saturated and unsaturated fatty acids with examples.	1.5 + 1.5	OR

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

(viii)	Name three types of enzymes for HIV replication and write role of each.	1x3	OR	What is heat of vaporization? What is its importance for animals?	1+2

Second Annual 2025 | Section C Q4 | 7 marks

Q.4	Explain double helical structure of DNA with suitable sketch as proposed by Watson and Crick.	5+2	OR	Explain steps of infection process of bacteriophage and replication of bacteriophage in lysogenic cycle.	3+4
Q.5	Explain components of TACT [illegible]				

First Annual 2026 | Section A Q2 | 1 mark

2.	Cellulose is mainly found in:	Animal cells	Fungal cell walls	Plant cell walls	Bacterial capsules

First Annual 2026 | Section A Q8 | 1 mark

8.	A triglyceride molecule is formed by:	One fatty acid and one glycerol	Two fatty acids and one phosphate	Three fatty acids and one glycerol	Amino acids and glycerol

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

Describe three effects of amino acid sequence change in haemoglobin.	03	OR

First Annual 2026 | Section A Q2 | 1 mark

Which polysaccharide is storage carbohydrate in animals?	Starch	Glycogen	Cellulose	Chitin

First Annual 2026 | Section A Q8 | 1 mark

8. A phospholipid molecule contains:	Three fatty acids only	Glycerol, two fatty acids a phosphate group	Only glucose units	Only amino acids

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

Compare sickle cell hemoglobin and normal hemoglobin. (Any three points)	1x3

Q.4	Explain the double helical structure of DNA as proposed by Watson and Crick. Draw diagram as well.	4+2	OR

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

<table>
<tr><th>S #</th><th>Question</th><th>(A)</th><th>(B)</th><th>(C)</th><th>(D)</th><th>(A)</th><th>(B)</th><th>(C)</th><th>(D)</th></tr>
<tr><td>(i)</td><td>A certain poison disrupts the cytoskeleton of cell. Which of the following functions would be affected most probably by the poison?</td><td>Digestion within lysosomes</td><td>Protein synthesis</td><td>Cell division</td><td>Cellular respiration</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>(ii)</td><td>Identify hetero polysaccharide from the following:</td><td>Chitin</td><td>Glycogen</td><td>Pectin</td><td>Cellulose</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>(iii)</td><td>Glycolysis is a process that:</td><td>Produces ATP and NADH</td><td>Produces ATP only</td><td>Is not a net producer of energy rich molecules</td><td>Consumes as much ATPs as is produced</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>(iv)</td><td>What will happen to reaction if activation energy is decreased?</td><td>Rate of reaction decreases</td><td>Rate of reaction increases</td><td>No effect on the rate of reaction</td><td>Reaction is reversed</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>(v)</td><td>One of the following viruses have complex capsid:</td><td>Influenza virus</td><td>Adenovirus</td><td>Bacteriophage</td><td>Tobacco mosaic virus</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>(vi)</td><td>We have 1 billion bacteria per square centimetre of our skin. Why we have so many bacteria on our skin?</td><td>To produce acne, eczema and pimples on the skin</td><td>To limit the growth of pathogens by colonization resistance</td><td>To provide essential minerals and nutrients to the body</td><td>To help in decomposition after the death of a person</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>(vii)</td><td>Sundew is a/an:</td><td>Mutualistic plant</td><td>Parasitic plant</td><td>Carnivorous plant</td><td>Autotrophic plant</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>(viii)</td><td>Identify the column given in table that contains correct substances related to acylglycerols?
<table>
<tr><th>Substances</th><th>A</th><th>B</th><th>C</th><th>D</th></tr>
<tr><td>Amino acid</td><td>✓</td><td>x</td><td>x</td><td>x</td></tr>
<tr><td>Glucose</td><td>x</td><td>x</td><td>✓</td><td>✓</td></tr>
<tr><td>Fatty acid</td><td>x</td><td>✓</td><td>x</td><td>x</td></tr>
<tr><td>Glycerol</td><td>x</td><td>✓</td><td>x</td><td>x</td></tr>
</table></td><td></td><td></td><td></td><td></td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
</table>

(iv)	Justify the significance of sequence of amino acids in normal and sickle cell haemoglobin.	3

FBISE model paper | Section C Q4 | 6 marks

Q.4	The two strands of DNA are not identical but are complementary. Give reasons. Also explain the double helical structure of DNA molecule.	1+5

First Annual 2025 | Section A Q3 | 1 mark

3.	Five corners ring in mono–saccharides is generally known as:	Furanose	Pyranose	Thiophenose	Aldose	◯	◯	◯	◯

First Annual 2025 | Section A Q4 | 1 mark

4.	Vitamin-A is an example of:	Steroids	Terpenes	Neutral lipid	Phospholipid	◯	◯	◯	◯

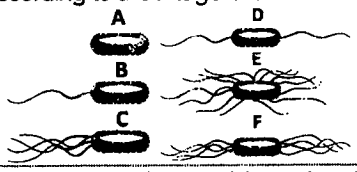
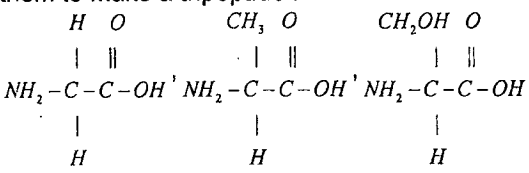
First Annual 2025 | Section B Q2(i) OR | 3 marks

Separate the following mono saccharides as aldo and keto sugar: Ribulose, Glucose, Fructose, Ribose, Dihydroxyacetone, Glyceraldehyde	03
Give the distinctive features of apicomplexan	

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

Name the nucleosides and nucleotides found in DNA.	03

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

(vii)	Suggest the appropriate name for the following bacteria according to their flagella distribution. 	03
(viii)	Justify the names of slime molds and water molds. Give one example of each group.	03
(ix)	The three amino acid given in diagram are glycine, alanine and serine. Display the peptide bonds in them to make a tripeptide molecule. 	03

Second Annual 2025 | Section A Q2 | 1 mark

2.	Which of the following is **NOT** a carbohydrate?	Glucose	Starch	Hemoglobin	Cellulose

Second Annual 2025 | Section A Q3 | 1 mark

3.	Which polysaccharide serves as the main structural component in plant cell walls?	Starch	Cellulose	Glycogen	Chitin

Second Annual 2025 | Section A Q3 | 1 mark

3.	In RNA nitrogen base that takes the place of thymine is:	Adenine	Cytosine	Guanine	Uracil

Second Annual 2025 | Section A Q4 | 1 mark

4.	Which term includes all others?	Carbohydrate	Starch	Monosaccharide	Polysaccharide

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

1.5 + 1.5	OR	Briefly explain Condensation and Hydrolysis with examples.	1.5 + 1.5

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

Classify proteins into globular and fibrous with examples.	1.5 + 1.5

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

(iv)	Write down Chargaff rules.	03	OR	genetic material. Write down roles of reverse transcriptase, integrase and protease enzymes.	1x3

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

1.5 + 1.5	OR	Copy and complete the following table representing disaccharides: Explain nitrification step of nitrogen cycle.	03

	Sucrose	Maltose	Lactose
Monomers			
Glycosidic linkage			

Give three examples of functional proteins along with their roles.	1x3