

APOLLO

Metabolism

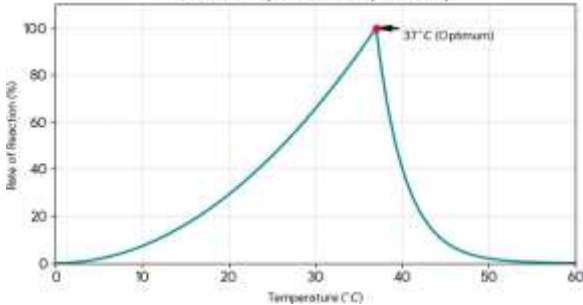
FBISE Biology Class 9 (SSC-I)

Domain F: Metabolism

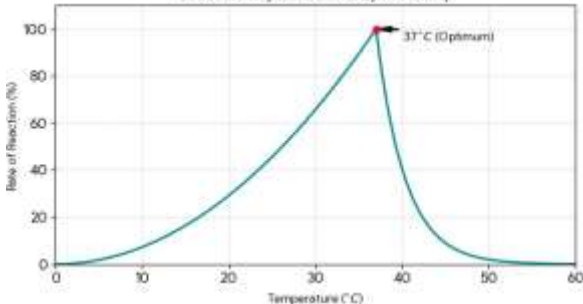
66 questions | questions

Original FBISE question crops. National Curriculum 2022-23 topic.

36.	In which of the following processes ATP is used as an energy currency?	Osmosis	Active transport	Diffusion	Facilitated diffusion
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Scenario for MCQ# 41 to 44		Enzyme activity increases with temperature, reaches a peak at 37°C, and then sharply declines. Effect of Temperature on Enzyme Activity 			
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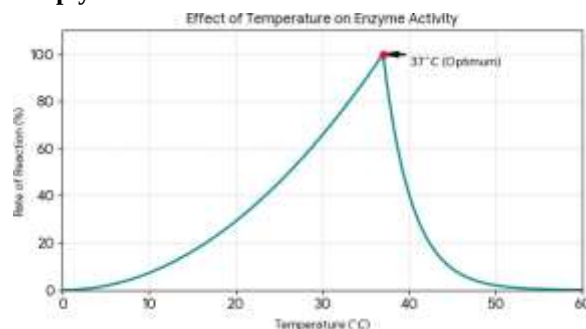
41	The peak of the graph represents:	Denaturation point	Optimum temperature	Freezing point	Substrate loss
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Scenario for MCQ# 41 to 44		Enzyme activity increases with temperature, reaches a peak at 37°C, and then sharply declines. Effect of Temperature on Enzyme Activity 			
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42	Why the reaction was not taking place at 0°C	Amount of substrate was very low	Enzymes were denatured	Enzymes were inactive	Large number of inhibitors were present
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Scenario for MCQ# 41 to 44

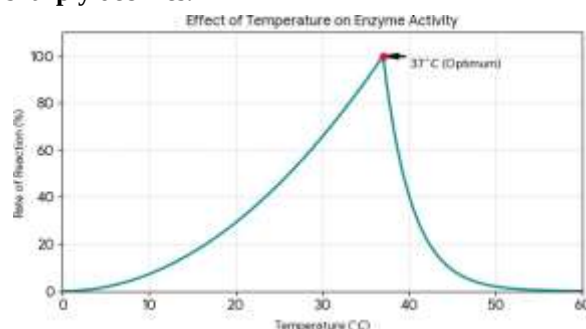
Enzyme activity increases with temperature, reaches a peak at 37°C, and then sharply declines.



43	The sharp decline after peak is due to:	Increased enzyme activity	Denaturation of enzyme	More ATP production	More substrate
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Scenario for MCQ# 41 to 44

Enzyme activity increases with temperature, reaches a peak at 37°C, and then sharply declines.



44.	If enzyme concentration is increased at 50°C, what will be the effect on reaction:	Show no change in reaction rate	Increase the rate of reaction even after 50°C	Shift optimum temperature to higher value	More products will be formed
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Scenario for MCQ# 49 to 52

Two cells are observed under different conditions of respiration:

- Cell A: High oxygen, high ATP, no lactic acid
- Cell B: Low oxygen, low ATP, lactic acid present

49.	Cell A is performing:	Anaerobic respiration	Aerobic respiration	Transport oxygen	Low metabolism
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Scenario for MCQ# 49 to 52

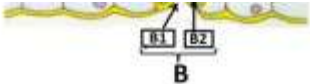
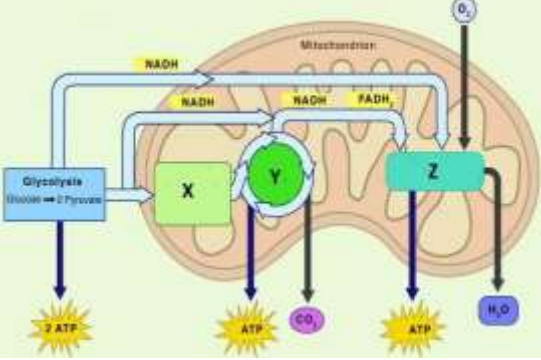
Two cells are observed under different conditions of respiration:

- Cell A: High oxygen, high ATP, no lactic acid
- Cell B: Low oxygen, low ATP, lactic acid present

50.	Cell B is most likely found in:	Resting muscle cell	Active exercising muscle	Mesophyll cells in plants	Bone cell
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Scenario for MCQ# 49 to 52		Two cells are observed under different conditions of respiration:			
		- Cell A: High oxygen, high ATP, no lactic acid - Cell B: Low oxygen, low ATP, lactic acid present			
51.	Which of the following information is correct about Cells A and B?	Cell A is performing Aerobic respiration	Cell B is performing Aerobic respiration	Both Cell A and Cell B are performing Aerobic respiration	Both Cell A and Cell B is performing Anaerobic respiration

Scenario for MCQ# 49 to 52		Two cells are observed under different conditions of respiration:			
		- Cell A: High oxygen, high ATP, no lactic acid - Cell B: Low oxygen, low ATP, lactic acid present			
52.	Compared to Cell A, Cell B produces less ATP because:	Glucose is not available	Oxygen is not used for complete oxidation	Cell B is a plant cell	Cell B is a prokaryotic cell

 (b) How respiratory and urinary systems of the human body work to maintain homeostasis?		1.5+
8.		1.5
 Given diagram shows the steps of aerobic respiration. Describe the steps X, Y and Z of aerobic respiration in detail. Mention the types and number of reactants, products and energy molecules in all steps (X, Y and Z).		2+2+2

8.	NADH releases _____ when it passes through electron transport chain.	2 ATP molecules	3 ATP molecules	20 ATP molecules	36 ATP molecules
	NADH ایکٹران ٹرانسپورٹ چین سے گزرنے پر _____ بنا ہے۔	2 ATP مالیکیولز	3 ATP مالیکیولز	20 ATP مالیکیولز	36 ATP مالیکیولز

9.	Light dependent reactions of photosynthesis occur in which part of cell? فوتو سنتھس کے روشنی سے وابستہ رد عمل کونسی جگہ پر واقع ہوتے ہیں؟	Thylakoid membrane تھیلکوئڈ غشاء	Stroma سٹروما	Grana گرنا	Cytoplasm سائٹوپلازم
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(iv)	Differentiate between activator and co-enzyme with examples. ایکٹوایٹر اور کو انزائم کے درمیان امتیاز واضح کریں۔	03
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OR	Why is ATP considered as energy currency of cell? ایسے نیٹنی سیل کو توانائی کی کرنسی کیوں کہا جاتا ہے؟	03
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1.5 + 1.5	OR	Briefly explain non-competitive inhibition of enzyme. ایک انزائم کی غیر مسابقتی روک تھام کی مختصر وضاحت کریں۔	
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OR	What is aerobic Respiration? Explain its four steps. ایروئک ریسپائریشن کیا ہے؟ اس کے چار مراحل کی وضاحت کریں۔	1+4
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8.	FADH ₂ releases _____ when it passes through electron transport chain. FADH ₂ الیکٹرون ٹرانسپورٹ چین کے ذریعے _____ ریلیز کرتا ہے۔	2 ATP molecules 2 ایٹ پی مالیکیولز	3 ATP molecules 3 ایٹ پی مالیکیولز	20 ATP molecules 20 ایٹ پی مالیکیولز	36 ATP molecules 36 ایٹ پی مالیکیولز
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9.	Which step of aerobic respiration uses oxygen as final acceptor to produce water? کونسا مرحلہ ایروئک ریسپیریشن میں آکسیجن کو پانی بنانے کے لیے حتمی مقبوضہ کے طور پر استعمال کرتا ہے؟	Glycolysis گلیکولیسس	Krebs cycle کریبس سائیکل	Formation of acetyl CO-A ایسٹیل کو آکسیجن کے ساتھ	Electron transport chain الیکٹرون ٹرانسپورٹ چین
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(iv)	What is meant by metabolism? Differentiate between catabolism and anabolism by examples. متابولزم کا کیا مطلب ہے؟ کیتابولزم اور اینابولزم کے درمیان امتیاز واضح کریں۔	1+2
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OR	Why is fermentation crucial process for living organisms? خمیر کیوں کہ جانداروں کے لیے اہم عمل ہے؟	03
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OR	Briefly explain competitive inhibition of enzyme. ایک انزائم کی مسابقتی روک تھام کی مختصر وضاحت کریں۔	03
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Q.3	Explain three major steps of Calvin cycle and draw its labeled sketch. کالوین کے تین اہم مراحل کو بیان کریں اور اس کا لیبل شدہ اسکچ بنائیں۔	3+2
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Illustrate any three points of comparison between competitive and non-competitive inhibition. تعاونی اور غیر تعاونی روک تھام کے درمیان تین موازنہ کے نقطوں کو واضح کریں۔

What is meant by compensation point of photosynthesis? فوٹوسنتھس کے کمپنیشن پوائنٹ سے کیا مراد ہے؟	03
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i) Discuss the role of ATP as energy currency in living organisms. (any three points) زندہ اجسام میں توانائی کی کرنسی کے طور پر اے ٹی پی کا کردار بیان کریں۔ (تین نکات)	03
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(xi) Briefly explain Kreb's cycle. کریب سائیکل کی مختصر وضاحت کریں۔	03
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Q.5	Explain characteristics of enzymes. (Any five) انزائمز کی خصوصیات کی وضاحت کریں۔ (کوئی سی پانچ)	05
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viii) How does a non-competitive inhibitor affect enzyme activity? جواب دیں۔	03
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Q.4	Differentiate between types of anaerobic respiration. Highlight the significance of anaerobic respiration as well. غیر آکسیجنی سانس لینے کے مختلف اقسام میں فرق لکھیں۔ ان کے اہمیت کو بھی واضح کریں۔	4+2
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Q.5	How is the scientific method used to solve a biological problem? Explain all steps in correct sequence with brief explanation of each involved in scientific method.	06	OR	Describe the types of cofactors of enzymes. How enzymes affect energy of activation? Explain. Draw graph as well.
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An enzyme is best described as a/an:	Lipid molecule	Hormone	Energy source	Biological catalyst	☐	☐	☐	☐
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(viii)	What is competitive inhibition in enzyme action? Explain briefly.	1+2	OR
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	Describe the steps involved in aerobic respiration. Also write chemical equations.	06	OR
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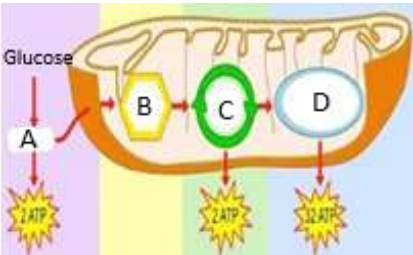
2.5	How is the scientific method used to solve a biological problem? Explain all steps in correct sequence with brief explanation of each involved in	06	OR	What are enzymes? Explain any five characteristics of enzymes.	1+5
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12	An organic molecule permanently attached to enzyme is a/an:	Activator	Prosthetic group	Coenzyme	Cofactor
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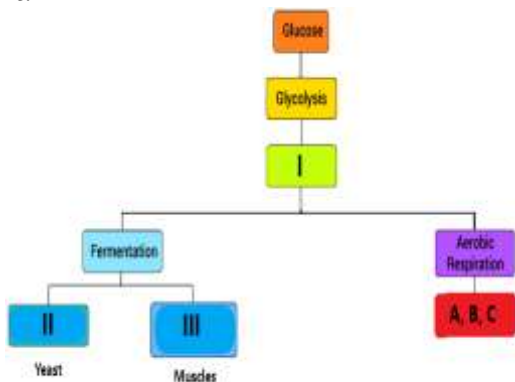
	Differentiate between competitive and non-competitive inhibition.	03
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3	Explain light dependent reactions of photosynthesis. Also draw the diagram.	5+1
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OR	Describe the effect of temperature and pH on enzyme activity. (Explaining why enzymes work best under specific conditions)	3+3
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(ix)	Which one of the following is NOT the part of embryo in a seed?	Radicle	Plumule	Endosperm	Cotyledo
(x)	The diagram shows an overview of aerobic respiration.  In which labelled process oxygen is used?	A	B	C	D

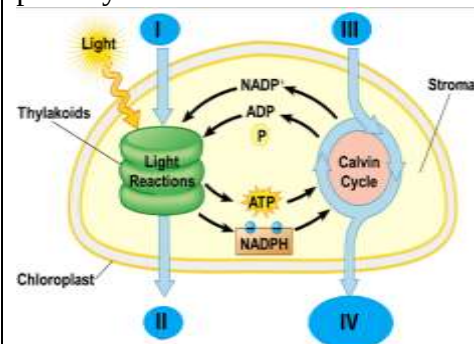
- (ii) The given flow chart illustrates the cellular respiration. Answer the questions related to it: 0.5x
6



(a) Name the phases of aerobic respiration	(b) Label the products
A.	I
B.	II
C.	III

- (iv) Describe the role of ATP as energy currency for living systems. 3

- OR The diagram shows an overview of photosynthesis.



Write the names of molecules shown as I, II, III and IV and mention which one is organic?

2+1

- Q.4 Describe structure of enzymes. Explain the role of cofactors and give types of cofactors with examples. 2+1
+3

کیمولاس	سائوٹا سیر	فیروول	لیکھو	سیروویک دیو پیست کے دوران ہاؤسڈ
Anaerobic respiration	Aerobic respiration	Fermentation	Photosynthesis	Which process generates energy for cells through cellular respiration?

Briefly explain the role of chlorophyll and sunlight in photosynthesis.	03
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What are enzymes? What is their role in biological reactions? (Any two points)	1+2
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members of human heart. How blood flows chambers?	2+1	OR	Illustrate the light dependent reactions of photosynthesis. Make diagram only.	03
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How temperature affects enzyme activity? Explain briefly.	03
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Q.4 Describe the major steps of cellular respiration, with relevant equations. Flow chart is not required.	05
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How does non-competitive inhibition differ from competitive inhibition?	1+2
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Increasing substrate concentration no longer increases reaction rate. State the reason for this effect on enzyme activity.	03
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(xi) What is photosynthesis? Enlist the raw material required for photosynthesis.	1+2
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2.5 + 2.5	OR	How the induced-fit model describes enzyme action more accurately than the lock-and-key model? Explain. Also draw diagram. ایندوسڈ فٹ ماڈل، لاک اینڈ کی ماڈل کے مقابلے میں انزائم کے عمل کی بہتر وضاحت کیسے کرتا ہے۔	2.5 + 2.5
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Describe briefly light dependent reactions of photosynthesis. فوتو سنتھیسز میں لائٹ پر منحصر ری ایکشنز کی مختصر وضاحت کریں۔	03
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Briefly describe the limiting factor in photosynthesis. فوتو سنتھیسز میں لیمنٹنگ فیکٹر کی مختصر وضاحت کریں۔	03
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A green plant is kept in darkness after being exposed to sunlight. Which photosynthetic reactions can continue in the dark and why? Explain briefly. ایک سبز پودے کو کچھ وقت دھوپ میں رکھنے کے بعد اندھیرے میں رکھ دیا جاتا ہے۔ فوٹو سنتھیسز کے	1+2
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How pH and temperature affect enzyme activity? Explain. (Include the concept of optimum conditions in your answer). pH اور درجہ حرارت انزائم کی کارکردگی کو کس طرح متاثر کرتے ہیں؟ وضاحت کریں۔	05
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