

SAMPLE CONTENT



IQB

IMPORTANT QUESTION BANK

Based on Latest Paper Pattern of Maharashtra State Board

Science & Technology Part - 2



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IQB Important Question Bank

STD. X

Science and Technology Part - 2

Salient Features

- A compilation of Most Important Questions
- A great resource for expeditious and exhaustive board exam preparation
- Written as per latest Board paper pattern
- Includes selective questions from 2019 - 2022 Board Papers
- Important inclusion: 'Smart Tip', 'Assignments' and 'Time Management' to solve the Activity Sheet
- Includes Model Activity Sheet for self evaluation
- Inclusion of **QR Code** for students to access 'Solution' for the Model Activity Sheet.

Scan the adjacent QR Code to access Board Activity Sheets and Solutions of March 2020, December 2020 and March 2022.



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PREFACE

IQB Science and Technology Part – 2: Std. X is a treasure house of the most important questions that would help students face the Board Examination confidently. This book is created in accordance with the Latest Board paper Pattern.

IQB (Important Question Bank) covers various types of questions such as Find the odd one out, Complete the Table/Flowchart, Questions based on diagram, etc. along with answers. Moreover, the questions provided are arranged in a chapter-wise format so that students can easily prepare for the examination. The book also includes four **Assignments** for practice to boost student's confidence.

Smart Tip serves several purposes such as giving students an insight into approaching a question, making them aware of commonly made mistakes, cracking a question by efficient lateral thinking and demonstrating easy methods to cross-verify the answer. **Time Management** is provided with Paper Pattern (on the adjacent page) to aid students to solve the activity sheet within the allotted time.

We have provided One Model Activity Sheet at the end of the book that enables students to assess their level of preparation for the Board examination.

We have provided **QR Code** for students to access the 'Solution' given for the Model Activity Sheet.

Selected questions from the Board Papers of March 2019, July 2019, March 2020, December 2020 and March 2022 with answers have been included to give the student an idea about the kind of questions asked in the previous examinations.

Armed with an arsenal of carefully crafted questions and relevant answers, we are confident that this book will cater to the needs of students and effectively assist them to achieve their goal.

Publisher

Edition: Third

Disclaimer

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PAPER PATTERN

- There will be separate question papers for Part 1 and Part 2 of 40 marks each.
- Duration of each paper will be 2 hours.

Question No.	Type of Questions	Total Marks	Time Management
Q.1 (A)	5 Questions of 1 mark each [MCQs]	05	10 mins
Q.1 (B)	5 Questions of 1 mark each [Objectives]	05	10 mins
Q.2. (A)	3 Questions of 2 marks each [Scientific Reasoning] (Solve any 2)	04	10 mins
Q.2 (B)	5 Questions of 2 marks each (Solve any 3)	06	15 mins
Q.3.	8 Questions of 3 marks each (Solve any 5)	15	45 mins
Q.4.	2 Questions of 5 marks each (Solve any 1)	05	20 mins
	To Review and Re-checking	-	10 mins
Total		40 Marks	120 mins

CHAPTER WISE WEIGHTAGE

Sr. No.	Chapter Name	Marks	Marks with option
1.	Heredity and Evolution	03	05
2.	Life Processes in Living Organisms Part - 1	04	06
3.	Life Processes in Living Organisms Part - 2	05	07
4.	Environmental Management	05	07
5.	Towards Green Energy	04	06
6.	Animal Classification	04	06
7.	Introduction to Microbiology	04	06
8.	Cell Biology and Biotechnology	04	06
9.	Social Health	04	06
10.	Disaster Management	03	05
	Total	40	60

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*Note: Textual exercise questions are represented by * mark.*

Detailed Analysis of Question Paper

Science and Technology Part – 2

Time: 2 Hours

Total Marks: 40

Note:

- i. All questions are compulsory.
- ii. Use of a calculator is not allowed.
- iii. The numbers to the right of the questions indicate full marks.
- iv. In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
- v. For each MCQ, the correct alternative (A), (B), (C), (D) with subquestion number is to be written as an answer.
For Eg: (i) (A), (ii) (B), (iii) (C)
- vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.

Q.1. (A) Choose the correct alternative. [5]

- This question carries 5 marks. It contains 5 multiple choice type questions of 1 mark each. All questions are compulsory.
- After choosing the correct option, students are expected to write the correct option in the answer. Example: i. (A)

Q.1. (B) Answer the following. [5]

- This question carries 5 marks. It contains 5 sub-questions of 1 mark each. All sub-questions are compulsory.
- It includes various question types such as 'Find the odd one out', 'Find out the correlation', 'Make pairs', 'True or False', 'Give name', 'Question based on figure / picture' and 'Complete the flowchart'.
- In 'Find the odd one out', students are expected to identify the odd one out of 4-5 components. Students must give an appropriate explanation, only if asked in the question.
- In 'Find out the correlation/complete the analogy' students are expected to identify the correlation between two components and rewrite it. Students must give an appropriate explanation, only if asked in the question.

- In ‘Match the columns/ Make pairs’, students are expected to write the answer in tabular form. If the question contains three columns, students must match the contents of Column I with those in Column II and Column III appropriately, and write the answer in tabular format.
- In ‘True or False’, students are expected to mention whether the sentence is true or false. Students must write the correct statement, only if asked in the question.
In case the format of the question varies from those given above, students are expected to read the question carefully and attempt it accordingly, in the appropriate format

Q.2. (A) Give scientific reasons. (Any Two) [4]

- This question carries 4 marks. It contains 3 sub-questions of which any 2 are to be attempted. Each sub-question carries 2 marks.
- It includes all scientific reasoning questions. Students are expected to write the correct reasoning of the statement in points for better presentation.
In case the format of the question varies, students are expected to read the question carefully and attempt it accordingly, in the appropriate format.

Q.2. (B) Answer the following. (Any Three) [6]

- This question carries 6 marks. It contains 5 sub-questions of which any 3 are to be attempted. Each sub-question carries 2 marks.
- It includes various question types like ‘Write short notes’, ‘Complete the flowchart/table’, ‘Write the difference/ Distinguish’, ‘Write properties/ characteristics/ advantages/ effects/ uses’ and ‘Give examples’.
- In ‘Complete the table/ flowchart’, students are expected to add appropriate information in the table/ flowchart and redraw it.
- In ‘Write the difference/ Distinguish’, students are expected to write minimum 4 independent points of differences between two components, in a tabular format.
- In ‘Give examples’, students are expected to give minimum 4 examples based on a particular concept or process. The student is free to give examples from day-to-day life.
- Wherever applicable, students are expected to write answers in points for better presentation.
In case the format of the question varies from those given above, students are expected to read the question carefully and attempt it accordingly, in the appropriate format.

Q.3. Answer the following. (Any Five)**[15]**

- This question carries 15 marks. It contains 8 sub-questions of which any 5 are to be attempted. Each sub-question carries 3 marks.
- It includes various question types like ‘Give explanation using the given statements’, ‘Suggest remedies/ measures’, ‘Explanation of diagrams’, ‘Complete the diagram’, ‘Complete the table/ flowchart’, ‘Explain with the help of examples’, ‘Answer questions based on figures’, ‘Write answers with explanation’ and ‘Complete the paragraph’.
- In ‘Complete the table/ flowchart’, students are expected to add appropriate information in the table/ flowchart and redraw it.
- In ‘Complete the paragraph’ students are expected to rewrite the completed paragraph and underline the answers.
- Wherever applicable, students are expected to write answers in points for better presentation.

In case the format of the question varies from those given above, students are expected to read the question carefully and attempt it accordingly, in the appropriate format.

Q.4. Answer the following. (Any One)**[5]**

- This question carries 5 marks. It contains 2 sub-questions of which any 1 is to be attempted. Each sub-question carries 5 marks.
- It includes various question types like ‘Draw a figure and give explanation’, ‘Correct the given diagram and explain’, ‘Classify with detailed explanation’, ‘Read the given paragraph and answer the questions based on it’, ‘Complete the given table/flowchart and give explanation’, ‘Answer the questions in detail’ and ‘Make a concept diagram and give explanation’.
- In ‘Correct the diagram and explain’ students are expected to draw a new corrected, labeled diagram and write a detailed explanation.
- In ‘Complete the given table/ flowchart and give explanation’ students are expected to add appropriate information in the table/ flowchart and redraw it giving a detailed explanation.
- Wherever applicable, students are expected to write answers in points for better presentation.

In case the format of the question varies from those given above, students are expected to read the question carefully and attempt it accordingly, in the appropriate format.

Sample Content

Choose the correct alternative.

CHAPTER 1: HEREDITY AND EVOLUTION

- _____ nitrogenous base is NOT present in DNA.
(A) Adenine (B) Thymine
(C) Uracil (D) Guanine
- Identify the type of RNA that carries information from genes to the ribosome.
(A) rRNA (B) tRNA
(C) mRNA (D) All of the above
- Transfer of information from molecule of DNA to mRNA is called _____ process. [Mar 2020]
(A) Transcription (B) Translation
(C) Translocation (D) Mutation
- _____ is a connecting link between annelida and arthropoda. [Mar 2019]
(A) Duck-billed platypus (B) *Peripatus*
(C) Lungfish (D) Whale
- _____ man can be considered as the first example of wise man.
(A) *Dryopithecus* (B) Neanderthal
(C) *Aegyptopithecus* (D) *Ramapithecus*
- The _____ bones of ape like animals developed in such a way that they started to stand in erect posture.
(A) skull (B) wrist
(C) lumbar (D) ankle

Ans: 1. (C) 2. (C) 3. (A) 4. (B) 5. (B) 6. (C)

CHAPTER 2: LIFE PROCESSES IN LIVING ORGANISMS PART – 1

- After complete oxidation of a glucose molecule, _____ ATP molecules are formed.
(A) 12 (B) 24 (C) 38 (D) 76
- Process of glycolysis occurs in _____ of the cell.
(A) mitochondria (B) Golgi complex
(C) cytoplasm (D) chloroplast

3. _____ is the common step of aerobic and anaerobic respiration.
 (A) Gluconeogenesis (B) Glycolysis
 (C) Fermentation (D) TCA
4. Somatic and stem cells undergo _____ type of division. [Mar 2019]
 (A) meiosis (B) mitosis
 (C) budding (D) cloning
5. Cell plate formation will be observed during _____ in onion root tip cells.
 (A) meiosis (B) cytokinesis
 (C) karyokinesis (D) none of the these
6. Identify the step that can be used to count the number of chromosomes.
 (A) Prophase (B) Metaphase
 (C) Anaphase (D) Telophase
7. The spindle fibres start appearing from _____ stage of karyokinesis. [Mar 2020]
 (A) Prophase (B) Metaphase
 (C) Anaphase (D) Telophase
8. In mitotic division, nuclear membrane completely disappear in _____ phase. [Dec 2020]
 (A) Telophase (B) Prophase
 (C) Metaphase (D) Anaphase
9. How many daughter cells would be formed after meiotic division of one diploid cell?
 (A) 2 (B) 4 (C) 8 (D) 1
10. Which of the following represents a diploid cell?
 (A) n (B) $2n$ (C) $3n$ (D) $4n$
- Ans:** 1. (C) 2. (C) 3. (B) 4. (B) 5. (B) 6. (B)
 7. (B) 8. (C) 9. (B) 10. (B)

CHAPTER 3: LIFE PROCESSES IN LIVING ORGANISMS PART – 2

1. During asexual reproduction, cells divide by the process of
 (A) fertilization (B) double fertilization
 (C) mitosis (D) meiosis
2. Body breaks up into several fragments and each fragment starts to live as a new individual. This is _____ type of reproduction. [Mar 2020]
 (A) Budding (B) Fragmentation
 (C) Regeneration (D) Binary fission

Page no. **3** to **8** are purposely left blank.

To see complete chapter buy **Target Notes**

CHAPTER 1: HEREDITY AND EVOLUTION

1. **Foreleg of ox, Ear pinnae of sheep, Patagium of bat, Flipper of whale**

Ans: Ear pinnae of sheep

Foreleg of ox, patagium of bat and flipper of whale are similar in structure, indicating common ancestry (anatomical evidence). Ear pinnae of sheep are not similar to these structures.

2. **Cro-Magnon man, Australopithecus, Aegyptopithecus, Neanderthal man**

Ans: *Aegyptopithecus*

Aegyptopithecus walked using four limbs whereas, Cro-Magnon man, *Australopithecus* and Neanderthal man had erect posture.

[Note: Answers for the first chapter have been provided in the appropriate format. Answers to the corresponding chapters are provided in a concise format. Students are however, expected to follow the appropriate format while answering questions in the examination. Students must give an appropriate explanation, only if asked in the question.]

CHAPTER 3: LIFE PROCESSES IN LIVING ORGANISMS PART - 2

1. **Hydra, Paramoecium, Euglena, Amoeba**

Ans: *Hydra*

Hydra reproduces asexually by budding, while others reproduce asexually by binary fission.

OR

Hydra is a coelenterate, whereas *Amoeba*, *Euglena*, *Paramoecium* are protozoans.

OR

Hydra is a multicellular organism rest all are unicellular organisms.

2. **Style, Stigma, Ovary, Anther**

Ans: Anther

Anther is the male reproductive part of a flower, rest all are female reproductive parts of a flower.

3. **AIDS, Syphilis, Tuberculosis, Gonorrhoea**

Ans: Tuberculosis

Tuberculosis is not transmitted sexually, whereas rest all are transmitted sexually.

Page no. **10** to **14** are purposely left blank.

To see complete chapter buy **Target Notes**

CHAPTER 1: HEREDITY AND EVOLUTION

1.

	Column I		Column II		Column III
i.	Cenozoic era	a.	Amphibians	p.	Birds
ii.	Mesozoic era	b.	Aves	q.	Frogs
		c.	Reptiles	r.	Snakes

Ans:

	Column I		Column II		Column III
i.	Cenozoic era	b.	Aves	p.	Birds
ii.	Mesozoic era	c.	Reptiles	r.	Snakes

2.

	Column I		Column II
i.	Connecting link between Pisces and amphibians	a.	Lungfish
ii.	Connecting link between reptiles and mammals	b.	Duck-billed platypus
		c.	<i>Peripatus</i>

Ans:

	Column I		Column II
i.	Connecting link between Pisces and amphibians	a.	Lungfish
ii.	Connecting link between reptiles and mammals	b.	Duck-billed platypus

[Note: Answers for the first chapter have been provided in the appropriate format. Answers to the corresponding chapters are provided in a concise format. Students are however, expected to follow the appropriate format while answering questions in the examination.]

CHAPTER 2: LIFE PROCESSES IN LIVING ORGANISMS PART – 1

1.

	Column I		Column II		Column III
i.	Glycolysis	a.	Cytoplasm	p.	Pyruvic acid, ATP, NADH ₂ and H ₂ O
ii.	TCA	b.	Mitochondria	q.	Pyruvic acid, CO ₂ , ATP and FADH ₂
		c.	Ribosome	r.	CO ₂ , CoA, ATP, NADH ₂ and FADH ₂

Ans: (i – a – p), (ii – b – r)

CHAPTER 1: HEREDITY AND EVOLUTION

- *1. **Geographical and reproductive isolation of organisms gradually leads to speciation.**

Ans:

- i. Speciation is the formation of new species of plants and animals as an effect of evolution.
- ii. Each species grows in specific geographical conditions and hence have a specific habitat, type of food, reproductive ability and reproductive period.
- iii. Geographical isolation occurs when a population is separated into two or more groups by geographical barriers such as rivers, etc., thus exposing the organisms to different geographical conditions, leading to speciation.
- iv. Reproductive isolation is brought about by genetic variation of organisms, which gradually results in speciation.

Therefore, geographical and reproductive isolation of organisms gradually leads to speciation.

- *2. **Human evolution began approximately 7 crore years ago.**

Ans:

- i. The last dinosaurs appeared approximately 7 crore years ago, during which monkey-like animals were said to have evolved from ancestors similar to modern lemurs.
- ii. The tails of these monkey-like animals in Africa were speculated to have disappeared around 4 crore years ago, along with enlargement of brain and improved hands, that resulted in evolution of ape-like animals.
- iii. Gorillas and chimpanzees evolved 2.5 crore years ago, from which apes that used their hands for eating food and other work evolved around 2 crore years ago.
- iv. The lumbar bones of these apes developed in such a way that they started to stand in an erect posture and their hands became free for use, giving rise to the first human-like animals.

Thus, it is justified that human evolution began approximately 7 crore years ago.

CHAPTER 2: LIFE PROCESSES IN LIVING ORGANISMS PART - 1

1. **We feel exhausted after exercising.** [Mar 2020]
OR
While performing exercise, we feel tired. [Dec 2020]

Ans:

- i. When we exercise for a longtime, there is a shortage of oxygen for energy consumption. Thus, anaerobic respiration occurs in muscle cells.

Page no. **32** to **108** are purposely left blank.

To see complete chapter buy **Target Notes**

Model Activity Sheet

(Science and Technology Part - 2)

Time: 2 Hours

Total Marks: 40

Note:

- i. All questions are compulsory.
- ii. Use of a calculator is not allowed.
- iii. The numbers to the right of the questions indicate full marks.
- iv. In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
- v. For each MCQ, the correct alternative (A), (B), (C), (D) with subquestion number is to be written as an answer.
For Eg: (i) (A), (ii) (B), (iii) (C)
- vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.

Q.1 (A) Choose the correct alternative. [5]

- i. The disease related with the synthesis of insulin is _____.
(A) Diabetes (B) Haemophilia
(C) Dwarfism (D) Phenylketonuria
- ii. Which of the following is a connecting link between annelida and arthropoda?
(A) Duck-billed platypus (B) *Peripatus*
(C) Lungfish (D) Whale
- iii. _____ is obtained by the fermentation of apple juice by *Saccharomyces cerevisiae*.
(A) Wine (B) Cider
(C) Cocoa (D) Gluconic acid
- iv. Second male gamete unites with two polar nuclei to form.
(A) embryo sac (B) endosperm
(C) zygote (D) embryo
- v. Which of the following animals' body shows bilateral symmetry?
(A) Starfish (B) Jellyfish
(C) Earthworm (D) Sponge

Q.1 (B) Solve the following questions. [5]

- i. Fill in the boxes with the help of the given clue:
Requirement for stress free life.

B			D				
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