



INDIAN SCHOOL AL WADI AL KABIR
DEPARTMENT OF ENGLISH (2024-25)
CLASS – X
QUESTION BANK – THE MAKING OF A SCIENTIST
-by Robert W Peterson

INTRODUCTION

The plot revolves around the life of a scientist, Richard H. Ebright. It projects his hard work and passion. The chapter inspires you to pursue your dreams. As a child Ebright was extremely curious, in fact, this inquisitiveness only drove him to become a scientist. Ebright's journey of becoming a leading scientist conveys a strong message to us. It conveys that persistence, dedication and hard work are the key ingredients for achieving one's dreams. He made numerous scientific advances and became an accomplished scientist.

SUMMARY

It is a story of a curious child who is channelizing his curiosity to become a scientist. Richard Ebright was very close to her mother, and she plays a key role in developing his interest in science. He began his journey by collecting butterflies. Later on, he did research on the purpose of gold spots on pupae of monarch butterflies. His paper on working of cell got published in a scientific journal, and he became famous. Ebright participated in many science exhibitions and won many awards. Apart from science, he had an interest in public speaking and debate. He is competitive and possesses a go-getter personality. Thus, he has all the qualities of becoming a great scientist.

The Making of a Scientist' is a story about the leading scientist Richard Ebright. He was a curious child right from the beginning years of his life. He had started collecting butterflies in his childhood and by the time he is in second grade, he had already gathered all the 25 species found in his hometown. Also, he collected coins, fossils, and rocks. One day his mother gave him a book named 'The Travel of Monarch X'. This book has been a turning point in life and introduced him to the world of science.

He experienced the real science in country science fair and moreover he understood that to win something he needs to do something extraordinary. Later, for his eighth grade, he selected the assignment of finding the cause of viral sickness that killed almost all the monarch caterpillars every year. He thought that the cause for this could be a beetle, so, he reared caterpillars in the presence of beetles. However, he was wrong. Next year his project for the science fair was testing the theory that viceroy butterflies copy monarchs. His project got the first price in zoology division and third in country science fair.

In his second year of high school, Richard Ebright research led to his discovery of an unknown insect hormone which led to his new theory on the lives of cells. He tried to find the purpose of tiny golden spots on the back of monarch pupa. This project won first place in a country science fair and a chance to work in Walter Reed Army Institute of research.

As a high school student, he continued his advanced experiment and finally was able to identify hormones chemical structure. One day while looking at the X-ray photos of the hormone he got the idea of his new theory that tells cells can read the blueprint of its DNA. Ebright and his

roommate constructed the plastic model of a molecule to illustrate the working of DNA. It was a big leap forward and got published in a science magazine. He graduated from Harvard with the highest honours.

He has other interest also like public speaking, debate and is also a canoeist and an outdoor person. Also, he was competitive but in good sense and always want to do his best. Moreover, he possesses all the traits of becoming a good scientist. The story teaches us that with perseverance, dedication and hard work any dream is achievable.

MAIN CHARACTERS:

1. RICHARD H EBRIGHT

- A multifaceted genius; a great scientist, debater, canoeist, etc.
- Collected butterflies since childhood
- Worked on monarch butterflies, the cell and its DNA
- Inspired by his mother, Dr. Urquhart and his teacher R. A. Weiherer

2. RICHARD H EBRIGHT'S MOTHER

- Encouraged and inspired Ebright's interest in learning
- Bought him instruments, cameras; his only companion
- Got him the book 'The Travels of Monarch X' that changed Richard Ebright's life

3. DR. URQUHART

- Famous for work on monarch butterflies
- Taught at University of Toronto, Canada
- Helped Ebright with new ideas and suggestions

4. RICHARD A WEIHERER

- Social Studies teacher of Ebright
- Respected and admired by Ebright
- Turned Ebright's energy towards the Debating and Model United Nations clubs.

TEXTUAL QUESTIONS:

Question 1: How did a book become a turning point in Richard Ebright's life?

Answer: Richard Ebright had a deep fascination with collecting butterflies of different species. By the time he was in the second grade, Ebright had collected all twenty-five species of butterflies found around his hometown. That would probably have been the end of the butterfly collection for him. Then, his mother brought him a children's book, 'The Travels of Monarch X', which explained how monarch butterflies migrated to Central America, and this book opened the world of science for Richard. After reading the book, he found a lot of interest in tracking the migration of butterflies. This deep interest led him to work on several other projects and experiments on the Monarch butterflies. Thus, the book became a major turning point in Richard Ebright's life, and he became a renowned scientist.

Question 2: How did his mother help him?

Answer: Richard's mother always helped him by encouraging his interest in learning new things. She took him on occasional trips and bought scientific equipment for him, such as telescopes, microscopes, cameras, mounting materials and other related equipment and tried to help him in every possible way. If he didn't have anything to do, she found new things for him to

learn. She helped him in different ways, both directly and indirectly. She even gifted him the book 'The Travels of Monarch X' which proved to be a major turning point in Richard's life and motivated him to become a great scientist.

Question 3: What lesson does Ebright learn when he does not win anything at a science fair?

Answer: Ebright's entry at a science fair was slides of frog tissues, which he showed under a microscope. He did not win any prize for his display. He understood that to win in such a science competition, it was important for him to conduct real experiments, not simply make a neat display. Thereafter, he started working on various projects and conducted real experiments.

Question 4: What experiments and projects does he then undertake?

Answer: Ebright worked on many projects and conducted experiments. In his eighth-grade project, he tried to find the cause of a viral disease that kills nearly all monarch caterpillars every few years. He assumed that the disease might be carried by a beetle. For the following year's science fair project, he started testing the viceroy butterflies to show that they copied monarch butterflies. Besides, he also studied bright spots on the monarch pupa and discovered an unknown insect hormone that indirectly led to his new theory on the life of cells and how cells read their DNA.

Question 5: What are the qualities that go into the making of a scientist?

Answer: According to the author, three key ingredients make a scientist – a first-rate mind, curiosity and the will to perform the best and win for the right reasons. Richard Ebright was a bright student, a champion debater, a public speaker, a good canoeist and an all-around outdoors person. He was also an expert photographer, particularly of nature and scientific exhibits. He was a competitive person blessed with a curious mind and had all the necessary qualities to become a successful scientist which finally led him to his theory on the life of cells.

Question 6: How can one become a scientist, an economist, a historian...? Does it simply involve reading many books on the subject? Does it involve observing, thinking and doing experiments?

Answer: Reading books on any subject is just an aspect of learning. A learner must work on developing their observation skill and thinking power. To become a genius in a particular field, one must have a curious mind and the desire to explore new things by conducting real-life experiments and working on related projects. One must work hard and not feel taken down by mere failures. An urge to learn and discover a new theory requires a person to put in a lot of sweat and effort in any particular area of interest.

EXTRACT BASED QUESTIONS –

Read the extracts and answer the questions that follow:

I. So he did and did he ever! Beginning in Kindergarten, Ebright collected butterflies with the same determination that has marked all his activities. He also collected rocks, fossils, and coins. He became an eager astronomer, too. Sometimes star-gazing all night.

(a) Who is 'he'?

- (b) What more did he collect besides butterflies?
- (c) Find a word from the passage that means the same as 'strong will-power'.
- (d) What did he do at some night?

Answer:

- (a) He is Richard Ebright, a scientist.
- (b) Besides butterflies, he used to collect fossils, rocks and coins.
- (c) 'Determination'.
- (d) Sometimes he gazed at the stars all night

II. *From the first he had a driving curiosity along with a bright mind. He also had a mother who encouraged his interest in learning. She took him on trips, bought him telescope, microscope, cameras, mounting materials, and other equipment and helped him in many other ways.*

- (a) What was the role of his mother in his life?
- (b) How did she perform her duties?
- (c) What does the word 'bright' mean here?
- (d) What did Ebright desire?

Answer:

- (a) She observed her child, identified his interests and inclinations and channelized his energies in right direction.
- (b) To help him, she bought him books, took him out on trips, also bought him a telescope, a microscope, cameras, mounting materials and other equipment.
- (c) 'curious and intelligent'.
- (d) Ebright had a driving curiosity.

III. *He grew cells from a Monarch's wing in a culture and showed that the cells would divide and develop into normal butterfly wing scales only if they were fed the hormone from the gold spots.*

- (a) What did Ebright find out after working on hormone?
- (b) What conclusion did he make?
- (c) Write the word that means the same as 'ordinary'.
- (d) Where did he grow cells?

Answer:

- (a) The study of insect hormones helped him in giving a new theory on the life of cells.
- (b) He concluded that cells grew from monarch wings would divide and developed into normal butterfly wing scale only if they were fed the hormone from the gold spots.
- (c) 'Normal'.
- (d) He grew cells from a monarch's wing in a culture.

SHORT ANSWER TYPE QUESTIONS:

Q1: How did his mother help him?

Answer: Richard's mother always helped him by encouraging his interest to learn new things. She took him on occasional trips and bought scientific equipment for him such as telescopes, microscopes, cameras, mounting materials and other related equipment and tried helping him in

every possible way. If he didn't have anything to do, she found new learning things for him. She helped him through different ways, both directly and indirectly. She even gifted him the book 'The Travels of Monarch X' which proved a major turning point in Richard's life and motivated him to become a great scientist.

Q2: What lesson does Ebright learn when he does not win anything at a science fair?

Answer: Ebright's entry at a science fair was with slides of frog tissues, which he showed under a microscope. He did not win any prize for his display. He understood that to win in such a science competition, it was important for him to conduct real experiments, not simply make a neat display. Thereafter, he started working on various projects and conducted real experiments.

Q3. Why did viceroy butterflies copy monarchs?

Answer: Viceroy butterflies copied monarchs because monarchs do not taste good to birds. Viceroy butterflies on the other hand taste good to birds. So, the more they look similar to monarchs, the less likely they are to become a bird's prey. Thus, they protect themselves.

Q4. Why did Richard Ebright give up tagging butterflies?

Answer: Richard Ebright lost interest in tagging butterflies as it was tedious and there was not much feedback. Only two butterflies were recaptured in all the time he did it and they were not more than seventy-five miles away from where he lived.

Q5. What was the common belief about the twelve tiny gold spots on a monarch pupa? What is the actual purpose of these tiny gold spots?

Answer: These twelve tiny gold spots were believed to be ornamental only. The actual purpose of these tiny gold spots is to produce a hormone necessary for the butterfly's full development.

Q6. "But there was one thing I could do-collect things". What collection did Ebright make? When did he start making collection?

Answer: Ebright began collecting butterflies, rocks, fossils and coins. He began as early as when he was in kindergarten. He collected with same determination that had marked all his activities.

Q7. Why did Richard Ebright raise a flock of butterflies?

Answer: At the end of the book, "The travels of Monarch X", readers were invited to help study butterfly migrations. They were asked to tag butterflies for research by Dr. Frederick A. Urquhart. The butterfly collecting season around Reading lasts six weeks in late summer. If Ebright went to chase them one by one, he could not catch very many. So, he decided to raise a flock of butterflies.

Q 8. What lesson did Ebright learn when he could not win a prize at the science fair?

Answer: When Ebright could not win a prize at the science fair, he learnt that winners do real experiment, they don't simply display slides. Then he started conducting experiments. It was definitely a stepping stone towards his success. His competitive nature, his extra efforts and the will to win for the right reasons made him a successful scientist.

Q9. What other interests besides science did Richard Ebright pursue?

Answer: Richard Ebright was a champion debater and public speaker. He was a good canoeist

and all-around outdoor person. He was also an expert photographer, particularly of natural and scientific exhibits.

Q10. Who was Richard A. Weiherer? How did he help Richard Ebright?

Answer: Richard A. Weiherer was Richard Ebright's social studies teacher and adviser to the debating and Model United Nations Clubs. He helped Ebright a lot because he opened his mind to new ideas.

Q11: What experiments and projects does he then undertake?

Answer: Ebright worked on many projects and conducted experiments. In his eighth-grade project, he tried to find the cause of a viral disease that kills nearly all monarch caterpillars every few years. He assumed that the disease might be carried by a beetle. For the following year science fair project, he started testing the viceroy butterflies to show that they copied monarch butterflies. Besides, he also studied bright spots on the monarch pupa and discovered an unknown insect hormone that indirectly led to his new theory on the life of cells and how cells read their DNA.

Q12: What are the qualities that go into the making of a scientist?

Answer: According to the author, there are three key ingredients that make a scientist – starting with a first-rate mind, curiosity and the will to perform the best and win for the right reasons. Richard Ebright was a bright student, a champion debater, public speaker, a good canoeist and all-around outdoors-person. He was also an expert photographer, particularly of nature and scientific exhibits. He was a competitive person blessed with a curious mind and had all the necessary qualities to become a successful scientist that finally led him to his theory on the life of cells.

LONG ANSWER TYPE QUESTIONS:

Q1. Richard's mother had a great influence on him. Discuss.

OR

Discuss the role of Ebright's mother in making him a scientist.

Answer: Richard's mother played a huge role in making him a great scientist. She would take him on trips to encourage learning. He was a single child. After his father died, his mother made him the focus of her life. She would buy him all kinds of microscopes, telescopes and other equipment. After dinner, she gave him problems to solve. This helped Richard to learn a lot. She was his only companion for a long time. It was his mother who got him the book 'The Travels of Monarch X'. This book opened the world of science for Richard. She also wrote to Dr. Urquhart to guide her son. The scientist helped Richard and guided him. Thus, his mother actually shaped him into an extraordinary scientist.

Q2. Ebright's study of monarch pupas had a far-reaching impact. Elaborate.

Answer: For a long time, the scientific community had regarded the bright spots on a monarch pupa as purely ornamental. But Dr. Urquhart did not believe it. Nor did Richard. He started his experiments on the monarch pupa. He built a device with the help of a friend. This led to the discovery of a hormone. Richard proved that the hormone was necessary for the growth of the butterfly. This discovery got him many honours. Also, it led to another important study. He

began working on how cells read their DNA. DNA is the carrier of heredity and is called the blueprint of life. His theory could find answers to many cancers and diseases.

Q3. Richard Ebright displayed a well-rounded personality. Do you agree? Elucidate in the context of the given text.

Answer: Richard's genius was obvious by the time he was in his second grade. He managed to collect all twenty-five species of butterflies around his hometown and classify them. He also loved to collect coins, fossils and rocks. Science was not his only passion. He was an active member of his school's oratory club and model United Nations club and was an effective debater and a public speaker. He loved photography as well. He was an enthusiastic canoeist and an all-around outdoors person. Learning was easy for him.

So, he found it simple to devote time and energy to many other interests. He became a champion in whatever he did. He believed in the spirit of competition to win. But he did not wish to defeat others just to win. He wanted to win to do his best. Thus, he displayed a well-rounded personality.

Q4. Dr. Urquhart contributed significantly to Ebright's growth as a scientist. Explain

Answer: Richard had become bored with collecting butterflies. His mother got him a book on the migration of butterflies. Richard came in contact with Dr. Urquhart through the book. Dr. Urquhart directed him to study the migration pattern of butterflies. When he did not win any prize in the science fair in seventh grade, he again wrote to Dr. Urquhart to guide him. The scientist gave him many suggestions for new experiments. Richard performed these experiments throughout his high school and won many prizes. Later, he worked on why bright spots are found on a monarch pupa, motivated by Dr. Urquhart. It led to the discovery of a new hormone. The discovery of this new hormone further led to an important theory. The theory was about how cells read their DNA. In this way Dr. Urquhart proved to be his true mentor.

Q5: How did a book become a turning point in Richard Ebright's life?

Answer: Richard Ebright had a deep fascination of collecting butterflies of different species. By the time he was in the second grade, Ebright had collected all twenty-five species of butterflies found around his hometown. That was probably the end of butterfly collecting for him. Then, his mother brought him a children's book 'The Travels of Monarch X' which explained how monarch butterflies migrated to Central America and this book opened the world of science for Richard. After reading the book, he found a lot of interest in tracking the migration of butterflies. This deep interest led him to work on several other projects and experiments on the Monarch butterflies. Richard came in contact with Dr. Urquhart through the book. Thus, the book became a major turning point in Richard Ebright's life and he became a renowned scientist.

COMPETENCY BASED QUESTIONS:

Q1. "In order to become a scientist, one must have zeal, dedication devotion and a healthy competitive spirit." Do you agree with the given statement? Justify your statement with reference to Ebright in the story.

Answer: Curiosity to know more and motivation to find reasons for the existence of anything or any phenomena are necessary for becoming a successful scientist. The urge to know more develops the scientific aptitude in a person. At a very young age, Ebright became competitive by

participating in various county fairs. He never lost hope and kept on trying to do better. In addition to curiosity and motivation, Ebright displayed the qualities of hard work, sincerity, determination, and patience. He also accepted failure and success in the right spirit. His zeal, dedication, and devotion to his chosen field were remarkable. This made him a successful scientist.

Q2. Read the extract and answer the questions that follow

"I didn't get any real results," he said. "But I went ahead and showed that I had tried the experiment. This time I won." The next year his science fair project was testing the theory that viceroy butterflies copy monarchs. The theory was that viceroys look like monarchs because monarchs don't taste good to birds. Viceroys, on the other hand, do taste good to birds. So, the more they look like monarchs, the less likely they are to become a bird's dinner. Ebright's project was to see whether, in fact, birds would eat monarchs. He found that a starling would not eat ordinary bird food. It would eat all the monarchs it could get.

i Choose the option listing Ebright's qualities as depicted by the above extract.

1. persevering
 2. visionary
 3. determined
 4. liberal
 5. conceited
- a) 1, 2
 - b) 3, 5
 - c) 1, 3
 - d) 4, 5

ii According to the dictionary, 'fair' as a noun, shows the following meanings. Choose the option that lists the meaning similar to the usage to that in the extract.

- a) A gathering of stalls and amusements for public entertainment.
- b) A competitive exhibition showcasing projects or ideas.
- c) A periodic gathering for the sale of goods.
- d) An annual exhibition of livestock, agricultural products, etc., held by a town, county, or state.

iii Choose the option that is true for the two statements given about the information in the extract.

Statement 1- Starling feeds on viceroys.

Statement 2- Starling does not eat seeds and insects.

- a) Both statements are clearly mentioned in the extract.
- b) Statement 1 cannot be clearly inferred from the text and statement 2 is true.
- c) Statement 1 is false and statement 2 cannot be clearly inferred from the extract.
- d) Both statements need to be inferred from the given extract.

iv Choose the statements that are TRUE for the given extract contextually.

1. Ebright didn't get any results for the experiment he conducted on butterflies.
 2. Monarchs tasted awfully to the birds.
 3. Ebright wanted to explore the possibility of monarchs getting eaten by birds.
 4. He wanted to prove that viceroys are lookalikes of monarchs.
- a) 1, 2
 - b) 2, 3

c) 1, 3

d) 2, 4

v Four friends bring their pets to a pet show. Choose the option that mentions the friend with a starling as a pet.

Friend 1 has a turtle named Missy.

Friend 2 has a dragonfly named Majesty.

Friend 3 has a rabbit named Molly.

Friend 4 has a bird named Mitch.

a) Friend 1

b) Friend 2

c) Friend 3

d) Friend 4

ANSWERS:

i. c

ii. b

iii. c

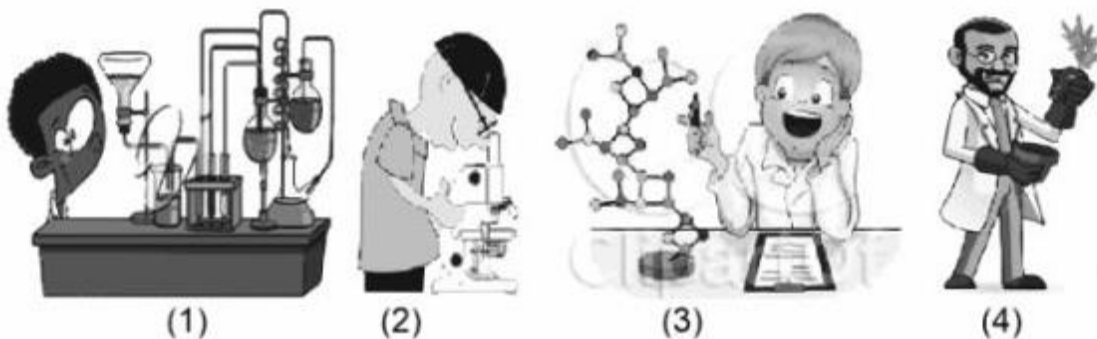
iv. b

v. d

Q3. Read the extract and answer the questions that follow

When he saw those photos, Ebright didn't shout, 'Eureka!' or even, 'I've got it!' But he believed that, along with his findings of insect hormones, the photos gave him the answer to one of biology's puzzles: how the cell can 'read' the blueprint of its DNA. DNA is the substance in the nucleus of a cell that controls heredity. It determines the form and function of the cell. Thus, DNA is the blueprint for life. Ebright and his college roommate, James R. Wong, worked all that night drawing pictures and constructing plastic models of molecules to show how it could happen. Together they later wrote a paper that explained the theory.

i Choose the option that shows the picture of the type of task Ebright and Wong were engaged in, as per the extract.



a) Option (1)

b) Option (2)

c) Option (3)

d) Option (4)

ii Ebright was perhaps expected to shout 'Eureka!' because he had

- a) realised that he needed a partner to work with to finalise his findings.
- b) discovered something new and ‘Eureka!’ was a cry to announce it.
- c) worked hard and was relieved at nearing the end of his project.
- d) given shape to the teachings of his teachers by choosing this field of science.

iii “Thus, DNA is the blueprint for life”, is another way of saying that the DNA contains a genetic _.

- a) experiment
- b) ultimatum
- c) takeaway
- d) plan

iv Four newspapers published a headline about Ebright and Wong. Choose the option that published a factually correct headline, as per the extract.

Newspaper 1	Newspaper 2	Newspaper 3	Newspaper 4
WONG DENIES CONTRIBUTING TO EBRIGHT’S THEORY	EBRIGHT COLLABORATES WITH ROOM-MATE WONG	EBRIGHT AND WONG EXAGGERATE THEIR THEORY-DEFY LOGIC	EBRIGHT AND WONG’S THEORY PROVED WRONG

- a) Newspaper 1
- b) Newspaper 2
- c) Newspaper 3
- d) Newspaper 4

v Compound words are those words that are formed by joining two separate words to create a new word with an entirely different meaning. Choose the option that lists the compound words from the above extract.

- 1. determines
 - 2. blueprint
 - 3. nucleus
 - 4. heredity
 - 5. room-mate
- a) 1, 3
 - b) 2, 4
 - c) 1, 4
 - d) 2, 5

ANSWERS:

- i. c**
- ii. b**
- iii. d**
- iv. b**
- v. d**

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