

ENGLISH

CHAPTER 4: A TRULY BEAUTIFUL MIND



A TRULY BEAUTIFUL MIND

~Summary~

Early Life of Einstein

Albert Einstein was born to German parents on 14th March, 1879 in Ulm, Germany. His mother thought that he was abnormal because his head was too large compared to other children. He started speaking, that also with difficulty, only by the time he was two-and-a-half years old. He loved to play with mechanical toys and preferred to play alone; thus other children called him 'Brother Boring'. Even his school headmaster was not happy with him, telling his father that Albert would never be successful, whatever career he took up. His mother made him learn how to play the violin at the age of six years. He, later on, became a talented amateur (non-professional) violinist.

Education and Married Life of Einstein

When Einstein's parents shifted to Milan, they allowed him to continue school in Munich, but he left the high school there at the age of 15 years as he felt uneasy with the strictness there. He was extraordinary in Mathematics and interested in Physics. So, he continued his studies at the university in Zurich. There he met a Serbian girl, Mileva Maric, who was also an intellectual. They fell in love and ultimately married after Albert found a job on finishing his university studies. But, their family life was not happy despite having two sons. They finally divorced in 1919.

Einstein's Special Theory of Relativity

Einstein finally secured a job as a technical expert in the patent office in Bern, where he assessed (judged) other people's inventions. Side-by-side, he continued developing his own ideas secretly. He published his Special Theory of Relativity in 1905, according to which time and distance are not absolute (independent).

He derived (obtained) the world's most famous formula describing the relationship between mass and energy: $E = mc^2$.

In 1915, Einstein published his 'General Theory of Relativity'. The solar eclipse of the sun proved his theory as correct. He became famous, as his work was considered a 'scientific revolution'. For this and his other achievements, he received the Nobel Prize in Physics in 1921.

Einstein Works for Peace and Democracy

When the Nazis came to power in Germany, Einstein emigrated (moved away) to the USA. When the world's scientists came to know that Germany had developed nuclear fission, they became afraid that the Nazis could build and use an atomic bomb. He was persuaded by a colleague to write to Franklin D Roosevelt, President of the USA, that this development could cause large-scale devastation. This made the Americans develop their own atomic bomb and use it against Japan near the end of the Second World War.

Einstein was shocked by the extent of destruction caused by these bombs and wrote an open letter to the United Nations to stop the arms buildup by forming a 'world government'. Einstein continued campaigning (push or press) for an end to the arms buildup and used his popularity to campaign for peace and democracy during the next ten years, till his death in 1955. He was known and celebrated as a visionary and 'world citizen' as much as a scientific genius.

Conclusion of A Truly Beautiful Mind

The chapter – A Truly Beautiful Mind illustrates the life story of the scientific genius, Albert Einstein. He was not just a scientist but was deeply concerned about human welfare. Due to this reason, the story is entitled as 'A Truly Beautiful Mind'.

NCERT SOLUTIONS**Questions (Page No. 50-51)**
(Thinking about the Text)

Question 1. Here are some headings for paragraphs in the text. Write the number(s) of them paragraph(s) for each title against the heading. The first one is done for you.

- a. Einstein's equation – 9
- b. Einstein meets his future wife
- c. The making of a violinist
- d. Mileva and Einstein's mother
- e. A letter that launched the arms race
- f. A desk drawer full of ideas
- g. Marriage and divorce

Answer:

- a. Einstein's equation – 9
- b. Einstein meets his future wife – 7
- c. The making of a violinist – 3
- d. Mileva and Einstein's mother – 10
- e. A letter that launched the arms race – 15
- f. A desk drawer full of ideas – 8
- g. Marriage and divorce – 11

Question 2. Who had these opinions about Einstein?

- a. He was boring.
- b. He was stupid and would never succeed in life.
- c. He was a freak.

Answer:

- a. He was boring – Einstein's playmates
- b. He was stupid and would never succeed in life – Einstein's headmaster
- c. He was a freak – Einstein's mother

Question 3. Explain what the reasons for the following are.

- a. Einstein leaving the school in Munich for good.
- b. Einstein wanting to study in Switzerland rather than in Munich.
- c. Einstein seeing in Mileva an ally.
- d. What do these tell you about Einstein?

Answer:

- a. Einstein left the school in Munich for good because he disliked the school's regimentation and often had arguments with his school teachers.
- b. Einstein wanted to study in Switzerland rather than in Munich because Switzerland was a city that was much more liberal than Munich.
- c. Einstein saw an ally in Mileva because just like him, she too was against 'Philistines' i.e. the people in Einstein's family and at the university with whom he was constantly at odds.
- d. The above things tell us that Einstein was a very liberal person who liked freedom. He was a person who had his own view about life.

Question 4. What did Einstein call his desk drawer at the patent office? Why?

Answer: Einstein called his desk drawer at the patent office the 'bureau of theoretical physics'. He called it so because he was secretly developing his own ideas and inventions related to physics.

Question 5. Why did Einstein write a letter to Franklin Roosevelt?

Answer: Einstein wrote a letter to Franklin Roosevelt because he wanted to warn America that Germany had the ability to build and use an atomic bomb, which if exploded in a port, would destroy the entire port as well as some of the surrounding territory.

Question 6. How did Einstein react to the bombing of Hiroshima and Nagasaki?

Answer: He was deeply shaken by the extent of destruction due to the bombing of Hiroshima and Nagasaki. He wrote a public missive to the United Nations and proposed the formation of a world government.

Question 7. Why does the world remember Einstein as a "world citizen"?

Answer: The world remembers Einstein as a “world citizen” because he agitated for an end to the arms buildup and campaigned for peace and democracy in the world.

Question 8. Here are some facts from Einstein’s life. Arrange them in chronological order.

[] Einstein publishes his special theory of relativity. [] He is awarded the Nobel Prize in Physics. [] Einstein writes a letter to U.S. President, Franklin D. Roosevelt, and warns against Germany’s building of an atomic bomb. [] Einstein attends a high school in Munich. [] Einstein’s family moves to Milan. [] Einstein is born in the German city of Ulm. [] Einstein joins a university in Zurich, where he meets Mileva. [] Einstein dies. [] He provides a new interpretation of gravity. [] Tired of the school’s regimentation, Einstein withdraws from school. [] He works in a patent office as a technical expert. [] When Hitler comes to power, Einstein leaves Germany for the United States.

Answer: [7] Einstein publishes his special theory of relativity. [9] He is awarded the Nobel Prize in Physics. [11] Einstein writes a letter to U.S. President, Franklin D. Roosevelt, and warns against Germany’s building of an atomic bomb. [2] Einstein attends a high school in Munich. [3] Einstein’s family moves to Milan. [1] Einstein is born in the German city of Ulm. [5] Einstein joins a university in Zurich, where he meets Mileva. [12] Einstein dies. [8] He provides a new interpretation of gravity. [4] Tired of the school’s regimentation, Einstein withdraws from school. [6] He works in a patent office as a technical expert. [10] When Hitler comes to power, Einstein leaves Germany for the United States.

Questions (Page No. 51-52) (Thinking about Language)

I. Here are some sentences from the story. Choose the word from the brackets which can be substituted for the italicised words in the sentences.

- A few years later, the marriage *faltered*. (failed, broke, became weak).
- Einstein was constantly at odds with people at the university. (on bad terms, in disagreement, unhappy)
- The newspapers proclaimed his work as “a scientific revolution.” (declared, praised, showed)
- Einstein got ever more involved in politics, agitating for an end to the arms build-up. (campaigning, fighting, supporting)
- At the age of 15, Einstein felt so stifled that he left the school for good. (permanently, for his benefit, for a short time)

- f. Five years later, the discovery of nuclear fission in Berlin had American physicists in an uproar. (in a state of commotion, full of criticism, in a desperate state)
- g. Science wasn't the only thing that appealed to the dashing young man with the walrus moustache. (interested, challenged, worried)

Answer:

- a. A few years later, the marriage became weak. (failed, broke, became weak).
- b. Einstein was constantly in disagreement with people at the university. (on bad terms, in disagreement, unhappy)
- c. The newspapers declared his work as "a scientific revolution." (declared, praised, showed)
- d. Einstein got ever more involved in politics, campaigning for an end to the arms build-up. (campaigning, fighting, supporting)
- e. At the age of 15, Einstein felt so stifled that he left the school permanently. (permanently, for his benefit, for a short time)
- f. Five years later, the discovery of nuclear fission in Berlin had American physicists in a state of commotion. (in a state of commotion, full of criticism, in a desperate state)
- g. Science wasn't the only thing that interested to the dashing young man with the walrus moustache. (interested, challenged, worried)

II. Study the following sentences.

- Einstein became a gifted amateur violinist, maintaining this skill throughout his life.
- Letters survive in which they put their affection into words, mixing science with tenderness.

The parts in italics in the above sentences begin with –ing verbs, and are called participial phrases. Participial phrases say something more about the person or thing talked about or the idea expressed by the sentence as a whole. For example:

– Einstein became a gifted amateur violinist. He maintained this skill throughout his life.

Complete the sentences below by filling in the blanks with suitable participial clauses. The information that has to be used in the phrases is provided as a sentence in brackets.

- _____, the firefighters finally put out the fire. (They worked round the clock.)
- She watched the sunset above the mountain, _____ (She noticed the colours blending softly into one another.)

- The excited horse pawed the ground rapidly, _____ (While it neighed continually.)
- _____, I found myself in Bangalore, instead of Benaras. (I had taken the wrong train.)
- _____, I was desperate to get to the bathroom. (I had not bathed for two days)
- The stone steps, _____ needed to be replaced. (They were worn down).
- The actor received hundreds of letters from his fans, _____ (They asked him to send them his photograph.)

Answer:

- Working round the clock, the firefighters finally put out the fire. (They worked round the clock.)
- She watched the sunset above the mountain, noticing the colours blending softly into one another. (She noticed the colours blending softly into one another.)
- The excited horse pawed the ground rapidly, neighing continually. (While it neighed continually.)
- Having taken the wrong train, I found myself in Bangalore, instead of Benaras. (I had taken the wrong train.)
- Having not bathed for two days, I was desperate to get to the bathroom. (I had not bathed for two days)
- The stone steps, being worn down, needed to be replaced. (They were worn down).
- The actor received hundreds of letters from his fans, asking him to send them his photograph. (They asked him to send them his photograph.)

Questions (Page No. 53) (Writing Newspaper Reports)

Here are some notes which you could use to write a report.

21 August 2005 — original handwritten manuscript of Albert Einstein unearthed — by student Rowdy Boeynik in the University of the Netherlands — Boeynik researching papers — papers belonging to an old friend of Einstein — fingerprints of Einstein on these papers — 16-page document dated 1924 — Einstein's work on this last theory — behaviour of atoms at low temperature — now known as the Bose-Einstein condensation — the manuscript to be kept at Leyden University where Einstein got the Nobel Prize.

Write a report which has four paragraphs, one each on:

- What was unearthed.

- Who unearthed it and when.
- What the document contained.
- Where it will be kept.

Your report could begin like this:

Student Unearths Einstein Manuscript

21 AUGUST 2005. An original handwritten Albert Einstein manuscript has been unearthed at a university in the Netherlands...

Answer:

Student Unearths Einstein Manuscript

21 AUGUST 2005. An original handwritten Albert Einstein manuscript has been unearthed at a university in the Netherlands.

It was unearthed by a student Rowdy Boeynik while researching papers when he came across some papers belonging to an old friend of Einstein.

The 16-page document dated 1924 contained fingerprints of Albert Einstein. It has Einstein's work on this last theory i.e. the behaviour of atoms at low temperature which is now known as the Bose-Einstein condensation.

The manuscript will be kept at Leyden University where Einstein got the Nobel Prize.

Questions (Page No. 53) (Dictation)

Your teacher will dictate these paragraphs to you. Write down the paragraphs with correct punctuation marks.

Answer: Do it yourself.