

BEEHIVE

Lesson _4 A truly beautiful mind

Short question -answer

1. Why did Einstein's playmates call him 'Brother Boring'?

ANS. Einstein did not mix up with the other children. He did not find their games interesting. He often uttered every word twice. He was often teased for his abnormally huge head. And so his friends nicknamed him "Brother Boring"

2. Why did Albert Einstein leave his school?

ANS. Albert Einstein left his school because he was not happy with the education system. He was not at ease with the strict regimentation of the school. He felt himself suffocated there. So, he decided to leave the school.

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

Einstein called his desk drawer at the patent office "The bureau of theoretical physics" because it was the place where he used to store his secretly developed ideas.

4. How was Einstein's private life unravelling after he finished his studies?

ANS. Albert had wanted to marry Mileva right after finishing his studies, but his mother was against it. She thought Mileva, who was three years older than her son, was too old for him. She was also bothered by Mileva's intelligence and found her to be "a book". Einstein put the wedding off.

5. What is Einstein's Special Theory of Relativity?

ANS. According to Einstein's Special Theory of Relativity, time and distance are not absolute. From this followed the world's most famous formula which describes the relationship between mass and energy, i.e., $E = mc^2$.

6. Why did Einstein write a letter to Franklin Roosevelt?

ANS. Einstein wrote a letter to Franklin Roosevelt about the dangers of atomic bombs when the Nazis were in Germany and he had to migrate from there. The discovery of Nuclear Fission in Germany made the American physicists upset that the Nazis could use an atom bomb.

7. "The discovery of nuclear fission in Berlin had American physicists in an uproar". Why?

ANS. The American physicists were disturbed by the discovery of nuclear fission in Berlin because they knew its destructive power. They were afraid that German would make an atom bomb and use it for destructive purposes.

8. Why does the world remember Einstein as a "world

ANS. Einstein is remembered as a "world citizen" because of his efforts towards world peace and democracy. He was concerned about the consequences of the atomic bomb. He even wrote a public missive to the United Nations and proposed the formation of a world government to control the use of nuclear weapons. This shows him as a world citizen who was concerned about humanity. Long Answer Type Questions

(100-120 words & 6 marks each)

1. Albert Einstein's mother thought of him as a freak. Explain in about 100-120 words as to why she thought so.

ANS. Albert Einstein could not speak for about two and a half years. And when he learnt to speak, he uttered every word twice. Even his playmates called him 'Brother Boring'. His head was of abnormally large size. So, his mother thought of him as a freak. Everywhere among his playmates as well as at school, he was regarded as stupid and his headmaster considered him to be good for nothing. He felt suffocated and tired in school due to its strict regimentation. What to say of others, his mother lacked trust in his potential. She should have accepted her son's different nature. Later, his qualities of tolerance and awareness of global issues made him a world-famous personality that proved everyone wrong, including his mother, who thought of him as a freak.

2. What was Einstein's contribution to the knowledge of science? Which values in his character made him a 'world citizen'?

ANS. Albert Einstein worked on his ideas about relativity and in 1905, he published his 'Special Theory of Relativity, according to which time and distance are not absolute.

Einstein earned international acclaim with the publication of General Theory of Relativity which enabled him to calculate in advance the extent of the deflection of light from fixed stars as it passed through gravitational field of the sun. The theory was declared as "a scientific revolution" by the newspapers. For his contribution to the development of science, Einstein was awarded the Nobel Prize for Physics in 1921.

After this, a number of honours were bestowed upon him. He was against arms build-up. He advocated, peace and democracy in the world. He did not want that his invention should be misused. He thought of humanity, of world peace and democracy. All these values in his character made him a global citizen.

Extra based questions:

One of the famous papers of 1905 was Einstein's Special Theory of Relativity, according to which time and distance are not absolute. Indeed, two perfectly accurate clocks will not continue to show the same time if they come together again, after a journey, if one of them has been moving very fast relative to the other. From this followed the world's most famous formula which describes the relationship between mass and energy:

$$E = mc^2$$

While Einstein was solving the most difficult problems in physics, his private life was unravelling. Albert had wanted to marry Mileva right after finishing his studies, but his mother was against it. She thought Mileva, who was three years older than her son, was too old for him. She was also bothered by Mileva's intelligence. "She is a book like you", his mother said. Einstein put the wedding off.

(i) According to the Special Theory of Relativity, why are time and distance not absolute?

- (A) They depend on the observer's location.
- (B) They change with the speed of movement.
- (C) They are affected by gravitational forces.
- (D) They vary with temperature.

(ii) What example does the extract use to explain the relativity of time?

ANS. Two clocks moving at different speeds will show different times when reunited.

(iii) Einstein's famous formula describing the relationship between mass and energy is

ANS. $E=mc^2$

(iv) Why did Einstein postpone his marriage to Mileva

- (A) Mileva refused to marry him.
- (B) His mother disapproved of Mileva.
- (C) He wanted to focus on his research.
- (D) Mileva was not intelligent enough.