

FOLLOW- UP LESSON:

JAGDISH CHANDRA BOSE

Session - 1

I

PRE-READING

- In this lesson you read about three scientists and their researches on plants. Read the following passage to know about Jagdish Chandra Bose, another scientist of India and his experiments.

II

WHILE-READING

TEXT

- Jagdish Chandra Bose is one of the most prominent scientists of the world, who proved by experimentation that both animals and plants share much in common. He demonstrated that plants are also sensitive to heat, cold, light, noise and various other external stimuli. He made an instrument called Crescograph for the purpose. He wrote two very famous books – ‘Response in the living and Non-Living’ (1902) and “the Nervous Mechanism of Plants” (1926).



He was born on 30 November, 1858 at Mymensingh, now in Bangladesh. He got his elementary education from a vernacular school, because his father thought that Bose should learn his own mother tongue, Bengali, before studying a foreign language like English. Bose attended Cambridge after studying Physics at Calcutta University. He returned to India in 1884 after completing a B.Sc. degree from Cambridge University. He died in the year 1937.

• **Comprehension Question:**

1. Who is Jagdish Chandra Bose ?
2. Who share much in common ?
3. How are plants like animals ?
4. What is a crescograph used for ? (sentence 2 of paragraph 1)
5. Name the book Jagdish Chandra Bose wrote ?
6. What are these books about ?
7. Where was he born ? When ?
8. Where did he have his primary education ? Why ?
9. What did he study at Calcutta University ?
10. Where did he get his B.Sc degree from ?
11. When did he die ?

Session - 2

III

1 Vocabulary :

Match the words in A with their meanings in B

A	B
demonstrate	a tool used for doing a particular job
elementary	famous
experiment	several, different
instrument	Primary
prominent	the language spoken in a particular area, regional language
sensitive	scientific test or trial
stimulus (singular)	something that causes reaction
various	of outside
vernacular	to prove, to show clearly that something is true
external	showing reaction or response to show

2 Usage :

Read the following sentence.

He wrote two very famous books : “Response in the living and Non-Living” and “the Nervous Mechanism of Plants”.

The verb ‘wrote’ is used in its second form or past form- ‘wrote’ to state that the writer of the book is not alive .

Let’s look at the following sentence:

Prativa Ray has written the ‘Silapadma’

In these sentences, we find the present perfect form of the verb ‘write’ has +written) shows that the author/writer is alive.

Rewrite the following sentences using the verb ‘write’ in its right form – past simple (wrote) or present perfect (has written).

(i) Jawaharlal Nehru (write) ‘The Discovery of India’. (not alive)

Ans. _____

(ii) Anita Desai (write) ‘Cry the Peacock’. (alive)

(iii) Gopinath Mohanty (write) ‘Paraja’. (not alive)

(iv) Sarala Das (write) ‘The Odia Mahabharat’. (not alive)

(v) Chetan Bhagat (write) ‘What Young India Wants’. (alive)

Session - 3

3 Writing :

a. Write answers to the following questions:

(i) Who was Jagadish Chandra Bose?

Ans. _____

(ii) What is the finding of his experiment?

Ans. _____

(iii) What is a Crescograph used for?

Ans. _____

(iv) Name the books he wrote

Ans. _____

b. Fill in this BIO-DATA of Jagadish Chandra Bose given below.

1. Name : _____
2. Profession : _____
3. Birth Place : _____
4. Date of Birth : _____
5. Primary Education : _____
6. Educational Institutions Attended

a. Name :

Subject :

b. Name :

Subject :

7. Language Known:

8. Experimented on:

9. Books he wrote :

10. The year of passing away :

- c. Write a paragraph on Sir Jagdish Chandra Bose using the information from the Bio-data you have already filled in.

WORD NOTE

(The words / phrases have been defined mostly on contextual meanings.)

breathing cell (n)	- cells that help breathing, ଶ୍ୱାସଗ୍ରନ୍ଥି
carried out (carry out)	- did an experiment, (କାର୍ଯ୍ୟ ଟି) ସମ୍ପାଦିତ କଲେ
elementary (adj)	- primary, ପ୍ରାଥମିକ ଶିକ୍ଷା
experiment (n)	- scientific test, ବୈଜ୍ଞାନିକ ପରୀକ୍ଷା
high pitched (adj)	- high volume (sound), ଅଧିକ ସ୍ୱରଶକ୍ତି, ଖୁବ୍ ଜୋରରେ
nutrients (n)	- rich elements of food that keep plants healthy, ପୁଷ୍ଟିକର
prominent (adj)	- famous, ପ୍ରସିଦ୍ଧ, ବିଶିଷ୍ଟ, ବିଖ୍ୟାତ
scientific facts (n)	- facts based on scientific researches, ବିଜ୍ଞାନ ସମ୍ବନ୍ଧିତ ତଥ୍ୟ
scientific way (n)	- following scientific procedures, ବୈଜ୍ଞାନିକ ପଦ୍ଧତି / ପ୍ରଣାଳୀ
vibration, (n)	- shaking, କମ୍ପନ
vernacular school	- mother tongue medium school, ମାତୃଭାଷା ମାଧ୍ୟମରେ ଶିକ୍ଷାଦାନ ଦିଆଯାଉଥିବା ବିଦ୍ୟାଳୟ

JAGDISH CHANDRA BOSE

Summary of the Text :

Jagadish Chandra Bose is one of the leading scientists in the world. He proved through his experiments that the animals and plants share much in common. He found out by experiment that the plants are sensitive to heat, cold, light, noise and various other external stimuli. He made an instrument called Crescograph for this purpose. He wrote two famous books titled Response in the Living and Non-Living (1902) and The Nervous Mechanism of Plants (1926).

He was born at Mymensingh, now in Bangladesh on 30 November, 1858. He started his elementary education in a vernacular school. Because his father wanted him to learn his mother tongue Bengali before studying a foreign language like English. Bose went to Cambridge after studying Physics at Calcutta University. He returned to India in 1884 after completing a B.Sc. degree from Cambridge University. He died in 1937.

ସାରାଂଶ :

ଜଗଦୀଶ ଚନ୍ଦ୍ର ବୋଷ ପୃଥିବୀର ପ୍ରମୁଖ ବୈଜ୍ଞାନିକମାନଙ୍କ ମଧ୍ୟରୁ ଜଣେ ଅନ୍ୟତମ । ସେ ପରୀକ୍ଷାଦ୍ୱାରା ପ୍ରମାଣ କରିଥିଲେ ଯେ ପ୍ରାଣୀ ଓ ଉଦ୍ଭିଦମାନଙ୍କ ମଧ୍ୟରେ ବହୁ ଜିନିଷ ସମାନ ଅଛି । ସେ ପରୀକ୍ଷା କରି ଦେଖାଇଥିଲେ ଯେ ଉଦ୍ଭିଦମାନେ ଉତ୍ତାପ, ଥଣ୍ଡା, ଆଲୋକ, ଶବ୍ଦ ଓ ଅନ୍ୟାନ୍ୟ ବିଭିନ୍ନ ବହିଃ ଉଦ୍ଦୀପନା ପ୍ରତି ସମ୍ବେଦନଶୀଳ । ସେ ଏହି ସଂକ୍ରାନ୍ତରେ ଏକ ପରୀକ୍ଷା ଯନ୍ତ୍ର ତିଆରି କରିଥିଲେ, ଯାହାକୁ ସେ ‘କ୍ରେସ୍ଟୋଗ୍ରାଫ୍’ ବୋଲି କହୁଥିଲେ । ସେ ଦୁଇଟି ପ୍ରସିଦ୍ଧ ଗ୍ରନ୍ଥ ରଚନା କରିଛନ୍ତି । ସେ ଦୁଇଟି ହେଲା ରେସ୍ପୋନ୍ସ ଇନ୍ ଦ ଲିଭିଙ୍ଗ୍ ଏଣ୍ଡ ନନ୍-ଲିଭିଙ୍ଗ୍ (୧୯୦୨) ଏବଂ ଦ ନର୍କସ ମେକାନିଜମ ଅଫ ପ୍ଲାଣ୍ଟସ ।

ସେ ବଙ୍ଗଳାଦେଶର ମାଇମେନ୍ସିଂ ଗ୍ରାମରେ ୧୮୫୮ ମସିହା ନଭେମ୍ବର ମାସ ୩୦ ତାରିଖରେ ଜନ୍ମଗ୍ରହଣ କରିଥିଲେ । ସେ ତାଙ୍କ ଗ୍ରାମ ବିଦ୍ୟାଳୟରୁ, ପ୍ରାଥମିକ ଶିକ୍ଷା ଆରମ୍ଭ କରିଥିଲେ; କାରଣ ତାଙ୍କ ପିତା ଚାହୁଁଥିଲେ ସେ ପ୍ରଥମେ ତାଙ୍କର ମାତୃଭାଷା ବଙ୍ଗଳାକୁ ଶିକ୍ଷା କରିବା ପରେ ଈରାଜୀ ପ୍ରଭୃତି ବିଦେଶୀ ଭାଷା ଅଧ୍ୟୟନ କରନ୍ତୁ । ବୋଷ କଳିକତା ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ପଦାର୍ଥ ବିଜ୍ଞାନରେ ଅଧ୍ୟୟନ ସମାପ୍ତକରି କେମ୍ବ୍ରିଜ୍ ବିଶ୍ୱବିଦ୍ୟାଳୟକୁ ଅଧ୍ୟୟନ ପାଇଁ ଯାତ୍ରା କରିଥିଲେ । ସେଠାରେ ବି.ଏସ୍‌ସି. ପାଠ୍ୟକ୍ରମ ସମାପ୍ତ କରି ୧୮୮୪ ମସିହାରେ ଭାରତକୁ ପ୍ରତ୍ୟାବର୍ତ୍ତନ କରିଥିଲେ । ୧୯୩୭ ମସିହାରେ ସେହି ମହାନ ବୈଜ୍ଞାନିକ ତାଙ୍କର ଶେଷନିଃଶ୍ୱାସ ତ୍ୟାଗ କରିଥିଲେ ।

ଉପାଦାନ

COMPETITIVE BOOKS

Board NCERT

With Solutions

OBS

Comprehension Questions & Answers

1. Who is Jagdish Chandra Bose ?

Ans. Jagdish Chandra Bose is one of the prominent scientists in the world.

2. Who share much in common ?

Ans. The animals and the plants share much in common.

3. How are plants like animals ?

Ans. Plants like animals, are sensitive to heat, cold, light, noise and many other external stimuli.

4. What is a crescograph used for ? (sentence 2 of paragraph 1)

Ans. Crescograph is used for testing the reaction of the plants to external stimuli like heat, cold, light and noise.

5. Name the book Jagdish Chandra Bose wrote.

Ans. Jagdish Chandra Bose wrote the books titled *Response in the Living and Non-Living* and *The Nervous Mechanism of Plants*.

6. What are these books about ?

Ans. The books are about the plants' sensitivity and nervous reaction to heat, cold, light, noise and various other external stimuli.

7. Where was he born ? When ?

Ans. He was born at Mymensingh, now in Bangladesh on 30th Nov. 1858.

8. Where did he have his primary education ? Why ?

Ans. He had his primary education from a vernacular school, because his father thought he should first learn his mother tongue Bengali before studying a foreign language like English.

9. What did he study at Calcutta University ?

Ans. He studied Physics at Calcutta University.

10. Where did he get his B.Sc degree from ?

Ans. He got his B.Sc degree from the Cambridge University.

11. When did he die ?

Ans. He died in the year 1937.

POST-READING

Vocabulary :

Match the words in A with their meanings in B.

A

demonstrate
elementary
experiment
instrument
prominent
sensitive
stimulus (singular)
various
vernacular
external

B

a tool used for doing a particular job
famous
several, different
Primary
the language spoken in a particular area, regional language
scientific test or trial
something that causes reaction
of outside
to prove, to show clearly that something is true
showing reaction or response to show

Ans.	A	B
demonstrate	_____	a tool used for doing a particular job
elementary	_____	famous
experiment	_____	several, different
instrument	_____	Primary
prominent	_____	the language spoken in a particular area, regional language
sensitive	_____	scientific test or trial
stimulus (singular)	_____	something that causes reaction
various	_____	of outside
vernacular	_____	to prove, to show clearly that something is true
external	_____	showing reaction or response to show

Usage :

Read the following sentence.

He wrote two very famous books:
"Response in the living and Non-Living"
and "the Nervous Mechanism of Plants".

The verb 'wrote' is used in its second form or past form - 'wrote' to state that the writer of the book is not alive.

Let's look at the following sentence :

Prativa Ray has written the 'Silapadma'

In these sentences, we find the present perfect form of the verb 'write' has + written) shows that the author / writer is alive.

Rewrite the following sentences using the verb 'write' in its right form - past simple (wrote) or present perfect (has written).

- (i) Jawaharlal Nehru (write) 'The Discovery of India'. (not alive)

Ans. Jawaharlal Nehru wrote The Discovery of India.

- (ii) Anita Desai (write) 'Cry the Peacock'. (alive)

Ans. Anita Desai has written Cry the Peacock.

- (iii) Gopinath Mohanty (write) 'Paraja'. (not alive)

Ans. Gopinath Mohanty wrote Paraja.

- (iv) Sarala Das (write) 'The Odia Mahabharat'. (not alive)

Ans. Sarala Das wrote The Odia Mahabharata.

- (v) Chetan Bhagat (write) 'What Young India Wants'. (alive)

Ans. Chetan Bhagat has written What Young India Wants.

Writing :

- b. Fill in this BIO-DATA of Jagadish Chandra Bose given below.
(Questions with Answers)

Ans.

1. Name : Jagadish Chandra Bose
2. Profession : Scientist
3. Birth Place : Mymensingh, now in Bangladesh
4. Date of Birth : 30 November 1858
5. Primary Education : In a vernacular school at Mymensingh

6. Educational Institutions Attended

a. Name : Calcutta University

Subject : Physics

b. Name : Cambridge University

Subject : B.Sc. degree in Physics

7. Language Known : Bengali, English

8. Experimented on : Both animals and plants

9. Books he wrote :

(a) Response in the Living and Non-Living,

(b) The Nervous Mechanism of Plants.

10. The year of his passing away : 1937.

c. Write a paragraph on Sir Jagdish Chandra Bose using the information from the Bio-data you have already filled in.

Ans. Jagadish Chandra Bose was a scientist by profession. He was born at Mymensingh now in Bangladesh on 30th November 1858. He had his primary education in a vernacular school. He studied physics at Calcutta University. Then he went to Cambridge University in London. There he obtained his B.Sc. degree. After completing his education there he returned to India in 1884. He spoke both Bengali and English. He wrote two books titled Response in the Living and Non-living and The Nervous Mechanism of Plants. He died in the year 1937.

Unseen Passage :

Lal Bahadur Shastri was born in a poor family. He occupied the office of Prime Minister of India. He stayed in power for 18 months but he could not own a house. He left us more than three

decades ago but his words still ring in our ears. And we can never forget such a great man.

Once he said about China. "Their attitude towards Bharat has not changed so far, naturally we also can't accept them as our friends. We are certainly anxious to settle border dispute with them, but not at the cost of our self respect. We never bow our heads in the face of Atom Bomb." On October 2, 1964, Shastriji called upon the farmers of India to serve their country by increasing production and solving food crisis.

Comprehension Questions :

1. What office did Lal Bahadur Shastri occupy ?
2. For how many months did he stay in power ?
3. What did still ring in our ears ?
4. What did he say about China's attitude towards India ?
5. What did he say about the border dispute with China ?
6. What did Shastri ask the farmers of India to do ?

Ans.

1. Lal Bahadur Shastri occupied the office of Prime Minister of India.
2. He stayed in power for eighteen months.
3. His words still ring in our ears.
4. He said that China's attitude towards India had not changed so far.
5. About the border dispute with China he said that we were certainly anxious to settle it, but not at the cost of our self-respect.
6. Shastriji asked the farmers of India to serve their country by increasing production and solving food crisis.