

MCQ Question · mcqquestion.com

Anil Kakodkar: Reactors, Tests, and a Landmark Deal

Free · Share

Anil Kakodkar: Reactors, Tests, and a Landmark Deal

Who stood firm for India’s nuclear independence? Anil Kakodkar helped build the Dhruva reactor and the Pokhran tests. As atomic energy chief, he kept India’s nuclear work free from outside control in the US talks.

1 Who was Anil Kakodkar?

Anil Kakodkar is an Indian nuclear scientist. He spent his career at the Bhabha Atomic Research Centre (BARC). He later led the Atomic Energy Commission.

Where did he come from?



Anil Kakodkar. Photo: Sagarmarkal, CC BY-SA 3.0, via Wikimedia Commons. Resized.

- He was born on 11 November 1943 in Barwani, Madhya Pradesh.
- His parents were Kamala and Purushottam Kakodkar.
- Both parents were freedom fighters.
- He earned a mechanical engineering degree from VJTI, Mumbai, in 1963.
- He joined BARC in 1964.
- He later earned a master’s degree in stress analysis from the University of Nottingham.

What is the memory hook?

Think “1943 born, 1963 degree, 1964 BARC”. Each year opens a new step.

> **Quick check 1.** Anil Kakodkar was born in Barwani, Madhya Pradesh. *(True or False?)* See answer ↓

Sources: youngscientistindia.org; thebetterindia.com

2 What did he build and test?

He played a major part in the Dhruva reactor and in India’s Pokhran tests. These are his best-known technical works.

What is the Dhruva reactor?

- Dhruva is India’s largest nuclear research reactor.
- It first went critical on 8 August 1985.
- Building it took about 10 years.
- Kakodkar was heavily involved in building it.
- He described it as “completely Indian”.
- A research reactor is built for experiments, not for making electricity.

What was his part in the tests?

- He was one of the core architects of the Pokhran test of May 1974.
- He was again a core architect of the Pokhran tests of May 1998.
- He also helped develop India’s PHWR (pressurised heavy water reactor) technology.

What is the memory hook?

Think “Dhruva 1985, tests 1974 and 1998”. The reactor came between the two tests.

> **Quick check 2.** The Dhruva reactor first went critical in 1985. *(True or False?)* See answer ↓

Sources: thebetterindia.com; youngscientistindia.org

3 Which posts and honours did he hold?

He led BARC and then the Atomic Energy Commission (AEC). He also won all three top Padma awards.

What posts did he hold?

- He was Director of BARC from 1996 to 2000.
- He became Chairman of the AEC and Secretary of the Department of Atomic Energy in 2000.
- Srikumar Banerjee took over from him on 30 November 2009.
- He led efforts to revive the reactors at the Madras Atomic Power Station, Kalpakkam, and at Rawatbhata.
- He is now Chancellor of the Homi Bhabha National Institute (HBNI).



Anil Kakodkar addresses the 46th IAEA General Conference, September 2002. Photo: IAEA Imagebank, CC BY 2.0, via Wikimedia Commons. Resized.

Which honours did he receive?

- He received the Padma Shri in 1998.
- He received the Padma Bhushan in 1999.
- He received the Padma Vibhushan in 2009.
- President Pratibha Patil presented the Padma Vibhushan on 31 March 2009.

What is the memory hook?

Think “98, 99, 2009: Shri, Bhushan, Vibhushan”. The honours rise in rank each time.

> **Quick check 3.** Kakodkar became Chairman of the AEC in 1996. *(True or False?)* See answer ↓

Sources: thebetterindia.com; world-nuclear-news.org

Sources: youngscientistindia.org; archive.pib.gov.in; dae.gov.in

4 What was his role in the India-US nuclear deal?

He said India's military nuclear work must stay free from outside control. The prime minister backed him.

What happened in Washington in July 2005?

- Manmohan Singh and George Bush were due to meet the next day.
- The Indian team was reviewing the draft of their joint statement.
- Kakodkar objected to the draft.
- Singh said that if Kakodkar said no, India could not go ahead.
- External Affairs Minister Natwar Singh asked him for an acceptable wording.
- Kakodkar scribbled it on a paper napkin.
- The idea was to split civil and military sites.
- All civil sites would come under checks by the International Atomic Energy Agency (IAEA).

What came next?

- In March 2006, talks on the separation plan ran until about 2 a.m. before Bush reached Delhi.
- On 27 July 2007 the government announced the finished 123 Agreement.

- Kakodkar called it “satisfactory” for carrying forward the nuclear programme.
- He also said it was consistent with national policy.
- He later wrote a memoir, *Fire and Fury*, with Suresh Gangotra.



Three steps in the nuclear deal. Original explanatory diagram.

What is the memory hook?

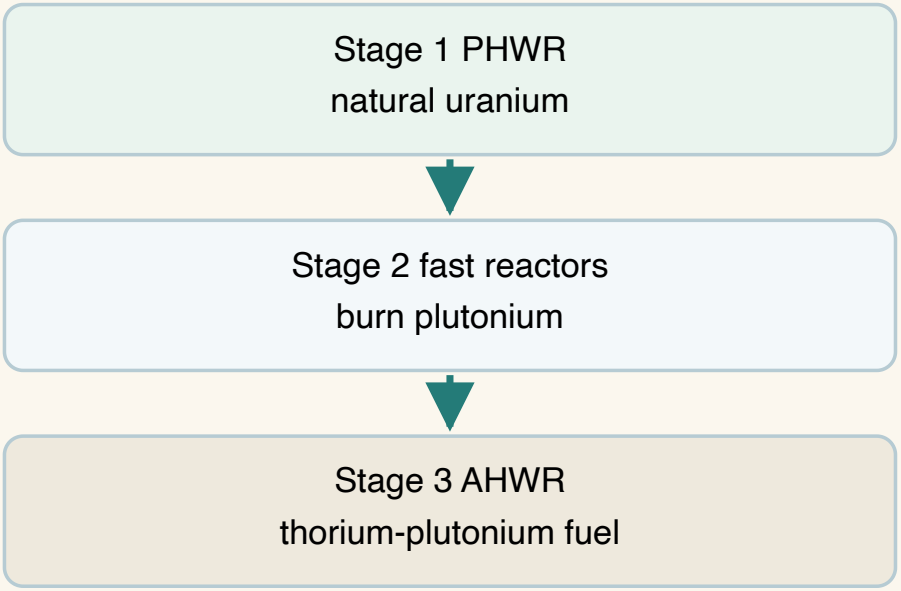
Think “2005 napkin, 2006 plan, 2007 text”. Each year is one step.

> **Quick check 4.** Kakodkar received the Padma Vibhushan in 1999. *(True or False?)* See answer ↓

Sources: dtnext.in; svaradarajan.com

5 What is the three-stage nuclear programme?

It is India’s long plan to move from uranium to thorium. Kakodkar called it a top task.



Fuel moves from uranium to thorium. Original explanatory diagram.

What are the three stages?

- Stage 1 uses PHWRs fuelled by natural uranium.
- Stage 2 uses fast reactors that burn the plutonium.
- Their outer layer holds uranium and thorium.
- So they also make more plutonium and uranium-233.
- Stage 3 uses advanced heavy water reactors that burn thorium-plutonium fuel.
- This stage makes more uranium-233 for later use.

What did Kakodkar say in 2008?

- He gave an interview to The Hindu on 20 July 2008.
- He said the three-stage programme “would be implemented unhindered”.
- He also said the timing of thorium needed adjusting.
- The aim was to bridge the demand-supply gap at the earliest.

What is the memory hook?

Think “uranium, plutonium, thorium”. The fuel changes at each step.

> **Quick check 5.** The napkin episode took place in Washington in July 2005. *(True or False?)* See answer ↓

Sources: world-nuclear.org; svaradarajan.com

6 Where does he stand on thorium today?

He wants India to move to thorium faster. He says India has little good uranium.

What did he say in 2026?

- In a January 2026 interview with IANS, he said the country has limited uranium of the right quality.
- He said newly found resources are still insufficient.
- He said India has abundant thorium.
- He said India should “very quickly transition from uranium to thorium”.
- The government has planned a nuclear mission targeting 100 gigawatts.

What did he add in April 2026?

- He cited the 500 MW Prototype Fast Breeder Reactor as a step towards thorium.
- He said oxide-fuelled reactors double their fuel in about 30 to 35 years.
- He said India is developing metal fuel and fuel recycling to speed this up.

What is the memory hook?

Think “little uranium, lots of thorium”. That is why he wants speed.

> **Quick check 6.** Stage 1 of the three-stage programme uses PHWRs fuelled by natural uranium. *(True or False?)* See answer ↓

Sources: sentinelassam.com; newsable.asianetnews.com

7 What are the common exam traps?

Four mix-ups come up again and again. Learn each pair.

What are the traps?

- **Research reactor or power reactor?** Dhruva is a research reactor. It does not make electricity for the grid.
- **Napkin year:** The napkin episode was in July 2005. The 123 Agreement text came on 27 July 2007.
- **Padma year:** His Padma Vibhushan came in 2009. The Padma Bhushan came in 1999.
- **Who followed him?** Srikumar Banerjee took over the AEC on 30 November 2009.

How do you remember them?

Think “Dhruva research, napkin 2005, Vibhushan 2009”. Match each name to its year.

> **Quick check 7.** Srikumar Banerjee took over from Kakodkar on 30 November 2009. *(True or False?)* See answer ↓

Sources: thebetterindia.com; dtnext.in

Sources: world-nuclear-news.org; youngscientistindia.org

Practice MCQs

1. Anil Kakodkar played a key role designing and building which reactor, India's largest indigenous research reactor?

A. Dhruva

B. Apsara

C. Cirus

D. Purnima

See answer ↓

2. In which year did Anil Kakodkar receive the Padma Vibhushan?

A. 1998

B. 2009

C. 1999

D. 2013

See answer ↓

3. In which year did Anil Kakodkar join the Bhabha Atomic Research Centre?

A. 1951

B. 1958

C. 1971

D. 1964

See answer ↓

4. In July 2007, Kakodkar spoke at the announcement of the finished text of which agreement?

A. The Indus Waters Treaty

B. The Nuclear Non-Proliferation Treaty

C. The Comprehensive Test Ban Treaty

D. The India-US 123 Agreement

See answer ↓

5. In 2026 interviews, what did Kakodkar urge India to do about fuel?

A. Use only coal

B. Stop all nuclear plans

C. Shift quickly from uranium to thorium

D. Import all its uranium

See answer ↓

Answer Key

1. **A.** The answer is Dhruva. It is India's largest nuclear research reactor, and it first went critical on 8 August 1985. Kakodkar was heavily involved in building it. The other three names are not the reactor linked to his work in this article. Memory hook: Dhruva, 1985, completely Indian. ↑ Q1
2. **B.** The answer is 2009. President Pratibha Patil presented it on 31 March 2009. 1998 was his Padma Shri and 1999 his Padma Bhushan. Memory hook: 98, 99, 2009, rising in rank. ↑ Q2
3. **D.** The answer is 1964. He graduated from VJTI, Mumbai, in 1963 and joined BARC the next year. The other years do not match his early career. Memory hook: degree 1963, BARC 1964. ↑ Q3
4. **D.** The answer is the 123 Agreement. The government announced its text on 27 July 2007, and Kakodkar called it satisfactory. India did not sign the NPT or the CTBT. The Indus Waters Treaty is about rivers. Memory hook: 123 in 2007. ↑ Q4
5. **C.** The answer is to shift quickly from uranium to thorium. He said India has abundant thorium but limited good-quality uranium. The other options go against his stated view. Memory hook: limited uranium, abundant thorium. ↑ Q5

Quick-check answers

1. **True.** He was born there on 11 November 1943. ↑ 1
2. **True.** The date was 8 August 1985. ↑ 2
3. **False.** it is false. 1996 is when he became BARC Director. He became AEC Chairman in 2000. ↑ 3
4. **False.** it is false. 1999 was his Padma Bhushan. The Padma Vibhushan came in 2009. ↑ 4
5. **True.** It was the evening before the Singh-Bush summit. ↑ 5
6. **True.** Stage 2 then burns the plutonium in fast reactors. ↑ 6
7. **True.** The handover took place in Mumbai. ↑ 7

Curated by Arsalan Zuberi · mcqquestion.com

Scan to read online

https://mcqquestion.com/articles/scitech0077-anil-kakodkar/