1. What is the Square Kilometer Array project, significance of India joining it

Artist's impression of Square Kilometre Array

Why in news?

India has decided to join the Square Kilometer Array (SKA) project, an international scientific collaboration working to build the world's largest radio telescope.

India had already been contributing to the project for the past several years, but the full member status, which offers greater scientific opportunities to use the upcoming facility, requires countries to sign and ratify an international treaty, and also make a financial commitment. India has approved Rs 1,250 crore for the project, which includes its funding contribution for the construction phase.

International scientific projects of which India is member

The decision to join SKA as a full member ensures India's participation in yet another international mega science project in the most advanced areas of scientific research. India has already decided to build a gravitational wave detector to join the international LIGO (Laser Interferometer Gravitational Wave Observatory) network, and is a full member of the ITER project, which is working to harness energy from nuclear

fusion reactions. India also has a strong participation in the Large Hadron Collider (LHC), the world's largest and most powerful particle accelerator that is running some of the most exciting experiments in particle physics.

The SKA

The Square Kilometer Array will not be a single large telescope, but a collection of thousands of dish antennas operating as a single unit. The name, Square Kilometer Array, comes from the original intention to create one square kilometre (one million square metre) of effective area for collecting radio waves. This was meant to be achieved by installing thousands of smaller antennas in a specific array design that would make them function like a single radio telescope. As of now, it appears that the USD 2.4-billion project (2021 prices) would eventually have a lesser collecting area than one square kilometre, but the original name has been retained.

Location

The antennas, about 200 of them in South Africa (Meerkat National Park) and more than 130,000 in Australia (Murchison Radio-astronomy Observatory) , are being installed in sparsely populated locations, chosen to ensure they are as far away from human activities as possible. This has been done in order to minimise signal interference from undesirable Earth-based sources. Construction at both the sites began in December 2022, and the first phase of the project is expected to be completed by next year.

Once operational, SKA would be between 5 to 60 times more powerful than the most advanced existing radio telescopes functioning in comparable frequency ranges.

What's in it for India

Though none of the SKA facilities would be located in India, there are immense science and technology gains for the country by participating in the project as a full member. In this regard, SKA offers opportunities similar to the LHC or the ITER, which too are located on foreign soil but have brought rich dividends to the Indian scientific community.

Radio astronomy is something in which India already has highly developed capabilities. The Giant Meterwave Radio Telescope (GMRT) near Pune is one of the most advanced — and sought-after — facilities in the world, which has been producing remarkable scientific results. The SKA, which will become the most promising tool for research in the most pressing scientific questions in astronomy, offers the next logical step forward for Indian scientists working in this area.

A full member status would provide India preferential access to the SKA facilities. Most existing telescopes operate under an open-use policy which allows research groups from any country to get time on the facility through competitive bidding by making a

scientific case. This is how the GMRT also works. But there is a growing argument that countries that contribute to building any large international project should have priority access to that facility. This is likely to be the case with the SKA. Member countries will get preferential allocation of time on the radio telescope, roughly in proportion to their contribution to the project, and only limited time slots would be available through competitive bidding.

There are technology benefits as well. The SKA would work on highest-end technologies, including electronics, software, materials science and computing. The intellectual properties generated by the project, though owned by the SKA Observatory, would be accessible to all the member countries. This can offer huge learning opportunities for scientists, academics and even private industry.

Participating in the project is expected to result in expanding the science and technology base in this area, along with capacity building and training opportunities. The Indian participation in the project is being led by Pune-based National Centre for Radio Astrophysics (NCRA), but 22 institutions are collaborating on SKA-related activities in the country. These include not just leading research institutions and some IITs and IISERs, but also a couple of universities and colleges. A few private companies are also involved.

India's involvement

India has been involved in the SKA project right from its inception in the 1990s, and contributed to the design and development of the telescope as well as in negotiating the SKA Observatory Convention, the international treaty that established the facility as an intergovernmental organisation. The main contribution has come in the development, and operation, of the Telescope Manager, the 'neural network' or the software that will run the entire facility.

There are plans to set up an SKA regional centre in the country that will be part of the global network to process and store data and make it available for the scientific community.

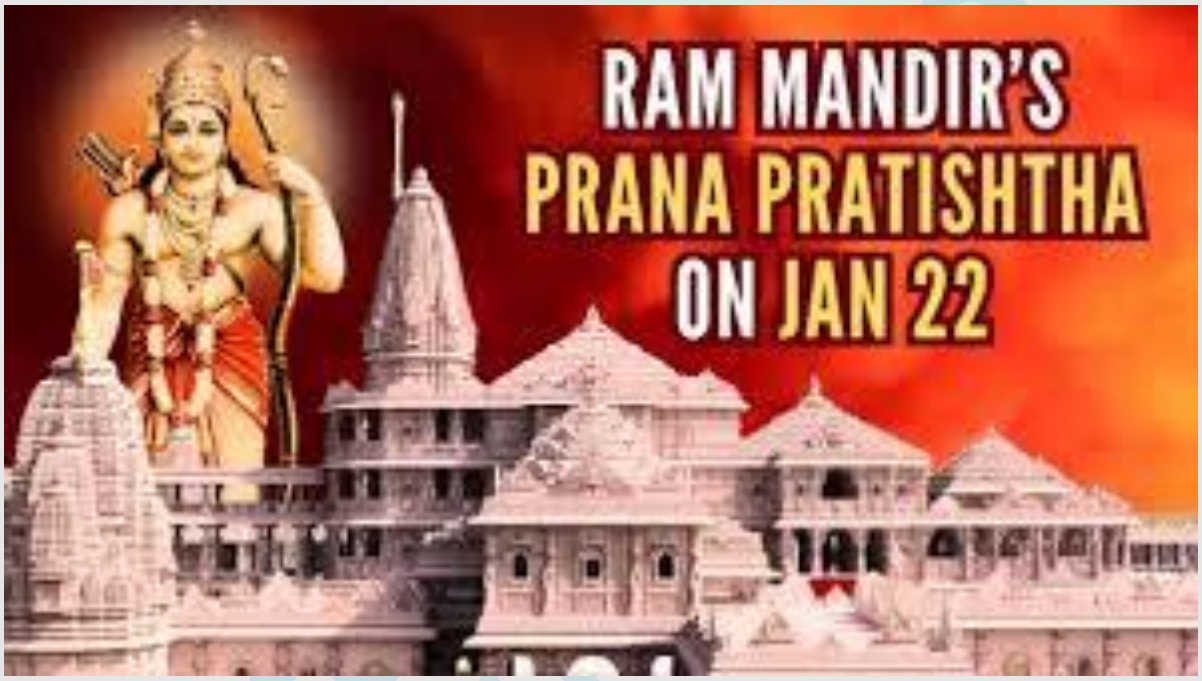
Indian scientists have identified several areas of research for which they want to use the SKA telescopes. These include studies relating to the evolution of the early universe, the formation and evolution of galaxies, neutron star physics, and solar sciences. More than 150 scientists, researchers, and students from over 30 different Indian institutions, including a few private companies, have been participating in ongoing science activities related to the SKA.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: The Indian Express

2. Pran pratishtha at Ayodhya Ram temple draws near: What is this ceremony, how it is performed

Why in news?
The day of the pran pratishtha of the idol at Ayodhya's Ram temple is coming closer. The pran pratishtha ceremony will be held on January 22.

While the basic meaning of pran pratishtha — giving life to the idol — is simple enough, the ceremony involves various rituals taken from the Vedas and Puranas, each with its own significance. So what exactly is pran pratishtha, and how is it carried out?



What is Pran Prathistha?
Pran prathistha is the act which transforms an idol into a deity, giving it the capacity to accept prayers and grant boons. For this, the statue has to go through various stages. Here we describe some of the prominent steps. The number of steps involved will depend on the scale of the ceremony.

Shobha yatra
One of the first stages is a shobha yatra, or a procession of the idol, taken out in the neighbourhood of the temple. During this yatra, as the idol is greeted and cheered on by onlookers, some of their devotion is transferred into it, imbuing it with devotion and divine strength.

The adhivas
To ready the idol for the pran pratishtha, multiple adhivaas are conducted, in which the idol is submerged in various materials. For one night, the idol is kept in water, which is called jalãdhivãs. Then it is submerged in grain, which is called dhãnyãdhivãs.

When an idol is being crafted, it sustains various injuries from the craftsman's tools. These adhivaas are meant to heal up all such injuries. Moreover, if the idol has a defect, or if the stone is not of a great quality, it will be found out when it is submerged in various materials.

Ritual bath

After this, the idol is given a ritual bath and its abhishek is performed with various materials, depending on the scale of the ceremony. This rite can involve "108 different types of materials, such as panchamrut, water containing the essence of various fragrant flowers and leaves, water which has been poured over the horns of a cow, and sugar cane juice.

Opening of the eyes

The most important ceremony is that of netronmeelan, or the opening of the deity's eyes.

The final step is the opening of the statue's eyes. This ceremony involves putting anjan, somewhat like kohl, around the deity's eyes, with a gold needle. This process is carried out from behind, as it is believed that if one looks into God's eyes the moment they open, their brilliance can be too much to take.

Once the anjan has been applied and the deity's eyes have opened, it has 'come to life' and can now receive devotees.

Where are these steps mentioned?

The process of the pran pratishtha is mentioned in the Vedas and elaborated upon in various Puranas, such as Mastya Puran, Vaman Puran, Narad Puran, etc.

Relevance: GS Prelims & Mains
Source: The Indian Express

3. What is the long-running legal dispute over AMU's minority character

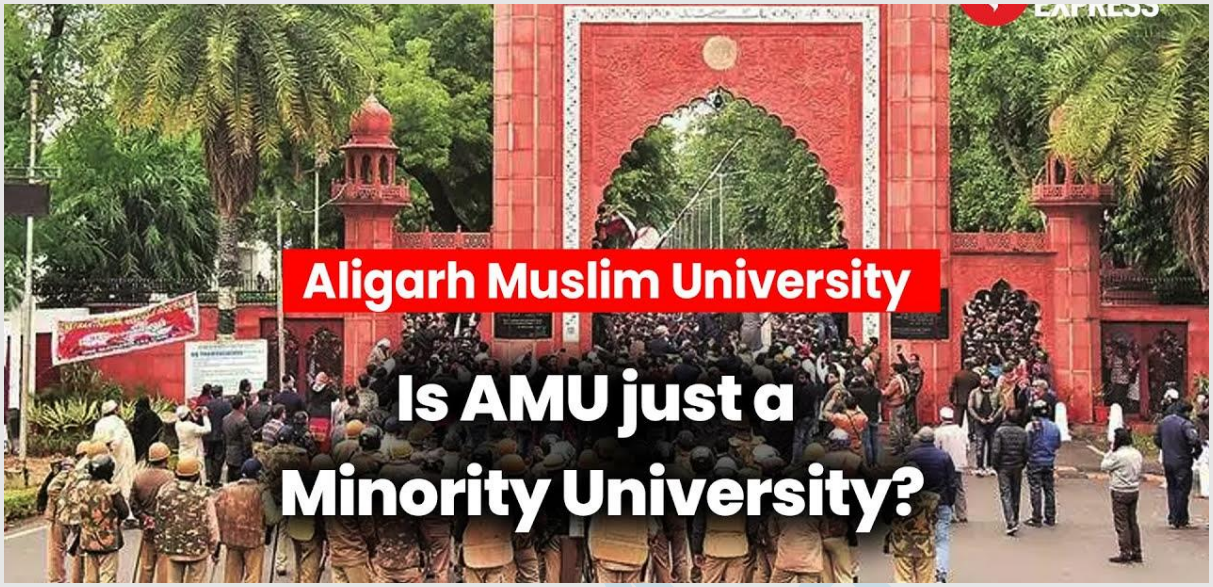
Why in news?

A seven-judge Bench of the Supreme Court started hearing the matter pertaining to Aligarh Muslim University's minority character. This is a dispute that dates back almost 57 years and has been adjudicated upon multiple times by different courts.

What is the 'minority character' of an educational institution?

Article 30(1) of the Constitution empowers all religious and linguistic minorities to establish and administer educational institutions. This provision reinforces the Union government's commitment to foster growth and development of minority

communities by guaranteeing that it will not discriminate in giving aid on the basis of their being 'minority' institutions.



When and how was AMU set up?
AMU's origins can be traced back to the Muhammadan Anglo-Oriental (MOA) College, established by Sir Syed Ahmad Khan in 1875 to help Muslims overcome educational backwardness and prepare for government services. MOA not only imparted Western education but also emphasised Islamic theology. Sir Syed also advocated for women's education.

In 1920, the institution was conferred university status and all assets of MOA College were transferred to it.

When did the university's minority character come under dispute?
The legal dispute over AMU's minority status dates back to 1967 when the Supreme Court (in S. Azeez Basha and another versus Union of India), led by then Chief Justice of India KN Wanchoo, was reviewing changes made in 1951 and 1965 to the AMU Act of 1920. These amendments affected how the university was run. For instance, originally, the 1920 Act said that the Governor General of India would be the head of the University. But in 1951, they changed it to replace 'Lord Rector' with 'Visitor,' and this Visitor would be the President of India.

Further, a provision that said only Muslims could be part of the University Court was removed, allowing non-Muslims to join. Additionally, the amendments reduced the authority of the University Court and increased the powers of the Executive Council of AMU. As a result, the Court essentially became a body appointed by the 'Visitor'.

These alterations in the AMU's structure faced a legal challenge in the Supreme Court. The petitioners argued primarily on the grounds that Muslims established AMU and,

therefore, had the right to manage it. It was while considering the challenge to these amendments that the top court held on October 20, 1967, that AMU was neither established nor administered by the Muslim minority.

The highest court determined that in 1920, Muslims could have set up a university, but that would not have guaranteed that the degrees from that university would be officially recognised by the Indian government. Hence, the court emphasised, AMU was established through a central Act to ensure the government's recognition of its degrees. So while the Act may have been passed as a result of the efforts of the Muslim minority, it does not imply that the University, under the 1920 Act, was established by the Muslim minority, the SC ruled.

Additionally, according to the 1920 Act, the SC stated, the university was not solely operated by Muslims. Instead, its administration was entrusted to the Lord Rector and other statutory bodies. Even the University Court, which had only Muslim members, was elected by an electorate which was not exclusively Muslim, the Supreme Court noted.

Minority Status

The SC ruling triggered nationwide protests from Muslims. In response, political authorities yielded in 1981 and introduced an amendment to the AMU Act, explicitly affirming its minority status. The amendment introduced Section 2(l) and Subsection 5(2)(c), which stated that the university was "an educational institution of their choice established by the Muslims of India" and "subsequently incorporated" as the AMU.

Question over Reservation policy

In 2005, the AMU implemented a reservation policy, reserving 50% of seats in postgraduate medical courses for Muslim candidates. This was challenged in the Allahabad High Court, which, in the same year, overturned the reservation and nullified the 1981 Act. The court reasoned that the AMU could not maintain an exclusive reservation because, according to the Supreme Court's verdict in the S. Azeez Basha case, it did not qualify as a minority institution. Subsequently, in 2006, a set of eight

petitions, including one from the Union government, contested the High Court's decision before the Supreme Court.

In 2016, the NDA government informed the SC that it was withdrawing the appeal filed by the government, saying, "as the executive government at the Centre, we can't be seen as setting up a minority institution in a secular state."

On February 12, 2019, a three-judge Bench presided by the then CJI Ranjan Gogoi referred the matter to a seven-judge Bench. The seven judge bench has started hearing the case.

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express & The Hindu