

EDUCATION**National Achievement Survey (NAS)**

A nationwide survey carried out by the Union Ministry of Education for the period of 2017 -2021 released recently.

❖ What is the objective of the NAS?

- The NAS is a periodic exercise carried out broadly in alternate years to monitor the health of the country's school education system.
- It has been designed by the Ministry of Education along with the National Council for Educational Research and Training (NCERT) to provide a data of learning outcomes in key subjects essentially "what students know and can do" at the end of Classes 3, 5, 8 and 10. These classes are generally seen to mark important stages in the development of a child's cognitive abilities.

❖ Since when has the NAS been carried out?

- The first edition of NAS was carried out in 2001.
- In the beginning, the survey was supposed to be an independent project of the NCERT, but it was soon brought under the ambit of the Sarva Shiksha Abhiyan, the government's flagship programme to achieve universalisation of elementary education (UEE), which has now been subsumed into the overarching Samagra Shiksha Abhiyan.
- Over the years, the structure of the survey has undergone changes. Between 2001 and 2015, each cycle of the survey covered students of just one grade — so, students of Class 3 were covered in 2003, 2007, 2012, and 2015; students of Class 5 were surveyed in 2001, 2005, 2009, and 2014; those of Class 8 were surveyed in 2002, 2007, 2010, and 2015; and students of Class 10 were covered in 2015 and 2018.

❖ What is the current structure of the survey?

- In 2017-18, the NAS was redesigned. For the first time, students of all four grades were covered on the same day. Also, instead of states, districts were made units of reporting, leading to a much bigger sample size.
- Until 2017-18, each cycle of NAS had a sample size of 1-2 lakh students; in 2017-18, over 20 lakh students were covered on the same day.
- The latest (2021) round covered 34 lakh students in 1.18 lakh schools across 720 rural and urban districts.

❖ And what exactly does the NAS assess?

- Until 2015-16, the survey assessed the competency of students based on the core curriculum followed by states and UTs.
- In 2017-18, the focus moved to mapping the progress of learning outcomes as listed under the Right to Education Rules as amended in 2017.
- Questions asked by the NAS are framed to assess whether students can read, and carry out simple mathematical operations that are required in daily life.
- The levels of difficulty and complexity of the questions vary from one grade to another.
- In the higher classes, the survey also assesses the knowledge acquired by students in areas related to the Constitution of India.
- The survey covers schools run by the central and state/UT governments, government-aided schools, and private unaided schools.
- Language, mathematics and environmental science are assessed in Classes 3 and 5; language, maths, science and social science in Class 8; and maths, social science, science and English are assessed for students in Class 10.

❖ What does NAS 2021 show?

- Compared with 2017 (in 2018 only Class 10 students were assessed), performance has taken a hit across grades.
- A comparative analysis shows that the national average scores of students across subjects have dropped by up to 47 marks.
- In Class 3, the average scores of students in language, maths and EVS have dropped by 13, 15 and 14 marks respectively.

- In Class 5, the scores in language, maths and EVS have dropped by 10, 26 and 27 marks.
- Class 8 has seen national average scores of language, maths, science and social science come down by 5, 14, 24, and 23 marks respectively.
- Class 10, maths, science, social science, and modern Indian language scores have dropped by 34, 47, 23 and 6 marks respectively.
- Only the English score has risen by 24 marks.
- ❖ **Are there regional-, gender-, or community-wise variations?**
- Except for Punjab and Rajasthan, the performance of nearly all states have declined compared to 2017 levels.
- In terms of 2021 numbers, 14 states and four UTs performed below the national average in Class 3; four UTs and 18 states performed below the national average in Class 5; 16 states and three UTs performed below the national average in Class 8.
- There were no marked differences between the scores of boys and girls. There were some variations among communities.
- For instance, in the case of Class 8 science, the scores of general category students have dropped by 9 marks, as compared to 28, 26, and 19 marks for SCs, STs, and OBCs respectively.
- There is a distinct rural-urban divide — the maths scores of Class 8 students in rural schools have dropped by 12 marks as against 4 marks by their urban counterparts.
- ❖ **What are the implications of the findings?**
- The Annual Status of Education Report (ASER), the NAS findings once again highlight the need for urgent interventions to improve foundational learning levels.
- All data that is coming out is indicating that it need to seriously work on foundational learning and NAS is no exception. It has come at the right time and as the New Year school begins, and schools reopen after the summer holidays, the work is cut out for authorities..

PRELIMS

1. Liquid -mirror telescope

- In early 2022, India's first liquid-mirror telescope, which will observe asteroids, supernovae, space debris and all other celestial objects from an altitude of 2,450 metres in the Himalayas, saw its first light as it peered into the zenith from the Devasthal observatory in Uttarakhand.
- Having entered the commissioning phase, it became the world's first liquid-mirror telescope to be commissioned for astronomy.
- ❖ **What is a liquid-mirror telescope?**
- The International Liquid-Mirror Telescope (ILMT) has been set up at the Devasthal Observatory campus owned by Aryabhata Research Institute of Observational Sciences (ARIES), Nainital in Uttarakhand.
- Located at 2,450 metres above mean sea level, there are two firsts with this
 - It's the only one to have been developed for astronomy research
 - It is also the only one of its kind to be operational anywhere in the world.
- The handful of liquid-telescopes that were previously built either tracked satellites or were deployed for military purposes. ILMT will be the third telescope facility to come up at Devasthal — one of the world's pristine sites for obtaining astronomical observations.
- With ILMT set to commence full-scale scientific operations in October 2022, it will work along with the 3.6-metre Devasthal Optical Telescope (DOT), the largest telescopes operating in India (of the 4-metre class). Also operating at the location is the 1.3-metre Devasthal Fast Optical Telescope (DFOT) inaugurated in 2010.
- ❖ **How is it different from a conventional telescope?**
- A conventional telescope is steered to point towards the celestial source of interest in the sky for observations.
- The liquid-mirror telescopes, on the other hand, are stationary telescopes that image a strip of the sky which is at the zenith at a given point of time in the night.
- A liquid-mirror telescope will survey and capture any and all possible celestial objects — from stars, galaxies, supernovae explosions, asteroids to space debris.

- Conventional telescopes have highly polished glass mirrors — either single or a combination of curved ones — that are steered in a controlled fashion to focus onto the targetted celestial object on specific nights. The light is then reflected to create images.
- The liquid-telescope is made up of mirrors with a reflective liquid, in this case, mercury — a metal which has a high light-reflecting capacity.
- About 50 litres (equal to 700kgs) of mercury filled into a container will be rotated at a fixed constant speed along the vertical axis of the ILMT.
- During this process, the mercury will spread as a thin layer in the container forming a paraboloid-shaped reflecting surface which will now act as the mirror. Such a surface is ideal to collect and focus light. The mirror has a diameter of 4 metre.
- Another difference between the two is their operational time.
- While conventional telescopes observe specific stellar sources for fixed hours as per the study requirement and time allotted by the respective telescope time allotment committee, ILMT will capture the sky's images on all nights — between two successive twilights — for the next five years starting October 2022.
- For protecting it from moisture during monsoon, the ILMT will remain shut for operations between June and August.

❖ **Which countries are involved in its development?**

- India, Belgium, Canada, Poland and Uzbekistan are the main countries who have collaborated to set up the ILMT. The telescope was designed and built at the Advanced Mechanical and Optical Systems Corporation and the Centre Spatial de Liège in Belgium.
- The funding, estimated to range between Rs 30 to Rs 40 crore, was jointly provided by Canada and Belgium.
- The operations and up-keep of this telescope is to be done by India.
- Along with ARIES, the other international institutes involved in the development process include the Institute of Astrophysics and Geophysics, Liège University, Belgium; the Canadian Astronomical Institutes from Vancouver, University of British Columbia; University of Montreal, University of Toronto, University of Victoria, York University, Laval University, Poznan Observatory, Poland; Ulugh Beg Astronomical Institute of Uzbek Academy of Sciences and the National University of Uzbekistan.

❖ **What is the data that will be generated and how will it be used?**

- It is estimated that the ILMT is capable of generating 10-15 GB/night. With ILMT set for operations every night during nine months a year for the next five years starting October 2022, there will be data generated in gigantic volumes.
- According to international norms, the data generated by a new telescope facility will be cleaned, maintained and archived at either of the host/participating institutes, in this case, the ARIES.
- The norms also mandate that for an initial stipulated period, the data will be open only for researchers from these participating institutes. At a later stage, the data will be accessible to all global scientific communities.
- In order to sieve, process and analyse the large datasets, the ILMT will deploy the latest computational tools, like Artificial Intelligence, Machine Learning and big data analytics.
- Another advantage for having such large data sets is that the select data can be culled out as base data which can then be followed-up for further focused studies using spectrographs, near-Infrared spectrograph mounted on the in-house DOT.

2. D2M technology

- The Department of Telecommunications (DoT) and India's public service broadcaster Prasar Bharati are exploring the feasibility of a technology that allows broadcasting video and other forms of multimedia content directly to mobile phones, without needing an active internet connection. The technology, called 'direct-to-mobile' (D2M) broadcasting, promises to improve consumption of broadband and utilisation of spectrum.

❖ **What is direct-to-mobile broadcasting?**

- The technology is based on the convergence of broadband and broadcast, using which mobile phones can receive terrestrial digital TV. It would be similar to how people listen to FM radio on

their phones, where a receiver within the phone can tap into radio frequencies. Using D2M, multimedia content can also be beamed to phones directly.

- The idea behind the technology is that it can possibly be used to directly broadcast content related to citizen-centric information and can be further used to counter fake news, issue emergency alerts and offer assistance in disaster management, among other things.
- It can be used to broadcast live news, sports etc. on mobile phones. More so, the content should stream without any buffering whatsoever while not consuming any internet data.

❖ **What could be the consumer and business impact of this?**

- For consumers, a technology like this would mean that they would be able to access multimedia content from Video on Demand (VoD) or Over The Top (OTT) content platforms without having to exhaust their mobile data, and more importantly, at a nominal rate. The technology will also allow people from rural areas, with limited or no internet access, to watch video content.
- For businesses, one of the key benefits of the technology is that it can enable telecom service providers to offload video traffic from their mobile network onto the broadcast network, thus helping them to decongest valuable mobile spectrum. This will also improve usage of mobile spectrum and free up bandwidth which will help reduce call drops, increase data speeds etc.

❖ **What is the government doing to facilitate D2M technology?**

- The Department of Telecommunications (DoT) has set up a committee to study the feasibility of a spectrum band for offering broadcast services directly to users' smartphones.
- Band 526-582 MHz is envisaged to work in coordination with both mobile and broadcast services.
- DoT has set up a committee to study this band.
- This band is used by the Ministry of Information & Broadcasting across the country for TV transmitters.
- Public service broadcaster Prasar Bharati had last year announced collaboration with IIT Kanpur to test the feasibility of the technology.

❖ **What are the possible challenges to the technology's rollout?**

- Bringing key stakeholders like mobile operators onboard will be the biggest challenge in launching D2M technology on a wide scale.
- Mass roll out of the technology will entail changes in infrastructure and some regulatory changes.

3. Section 25 company

- As per the Companies Act, 1956, a Section 25 company — similar to what is defined under Section 8 under Companies Act, 2013 — is a not-for-profit charitable company formed with the sole object of “promoting commerce, art, science, religion, charity, or any other useful object, and intends to apply its profits, if any, or other income in promoting its objects, and to prohibit the payment of any dividend to its members”.
- Section 8 of the Companies Act, 2013 includes other objects such as sports, education, research, social welfare and protection of environment among others.
- While it could be a public or a private company, a Section 25 company is prohibited from payment of any dividend to its members.
- Section 25 states that by its constitution the company is required/ intends to apply its profits, if any, or other income in promoting its objects and is prohibited from paying any dividend to its members.

❖ **Prominent examples of Section 25 or Section 8 companies**

- A large number of companies have been formed under the Section. Among these are Reliance Foundation, Reliance Research Institute, Azim Premji Foundation, Coca Cola India Foundation, and Amazon Academic Foundation.

❖ **Why are companies formed under Section 25 when there is a Trust structure in place?**

- Most people looking to form a charitable entity go for forming a company under Section 25, now Section 8, rather than a Trust structure because most foreign donors like to contribute to a company rather than Trust because they are more transparent and provide more disclosures.
- If a company has to be converted into a not for profit company, they can't be converted into a Trust, however, they can be converted into a Section 25/ Section 8 company.

ANSWER WRITING

Q. Keeping in view of India's internal security ,analyze the impact of cross border cyber attack . Also discuss the defensive measures against sophisticated attacks. (150)

Introduction

A cyber-attack is a type of attack that targets computer systems, infrastructures, networks, or personal computer devices using various methods at hands. Depending on the context, cyberattacks can be part of cyber warfare or cyber terrorism. A cyber-attack can be employed by sovereign states, individuals, groups, society, or organisations, and it may originate from an anonymous source.

The term 'cross-border' implies a movement or an activity across a border between the two countries. Impact of cross-border cyber-attacks include:

- Debilitating impact on Critical Information Infrastructure (power plants, nuclear plants, telecommunications etc.).
- It can be used as spyware to get sensitive information.
- Terrorists may use social media to plan and execute terror attacks and for virulent propaganda to incite hatred and violence.

The defensive measures undertaken to counter cross-border cyber-attacks are:

- Coordination with different agencies at the national level.
- The government needs to issue alerts and advisories regarding the latest cyber threats and countermeasures on a regular basis.
- The Information Technology Act, 2000 has deterrent provisions to deal with cyber-attacks.
- National Critical Information Infrastructure Protection Centre (NCIIPC) has been established to deal with cyber security issues.
- The National Cyber Coordination Centre (NCCC) has been set up for timely sharing of information with individual entities.
- Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Centre) has been launched for detection of malicious programs and provide free tools to remove the same.
- The Technology Development Board and Data Security Council of India (DSCI) have jointly decided to promote cyber security start-ups in India.

Conclusion

- The need of the hour is to produce a futuristic National Cyber-Security Policy which allocates adequate resources and addresses the concerns of the stakeholders.

QUIZ

1. Consider the following statement with reference to recently released National Achievement Survey (NAS)
 1. The NAS is a periodic exercise carried out every years to monitor the health of the country's school education system
 2. Initially the survey conducted under Sarva Siksha Abhiyan, recently it was brought under NCERT as a independent project

Choose the correct statement using the codes given below

- a) 1 only
 - b) 2 only
 - c) Both 1 and 2
 - d) **Neither 1 nor 2**
2. With reference to Companies Act 2013 consider the following statement
 1. For the first time Companies Act 2013 defined a not for profit company under section 25
 2. Cooperate Social Responsibility (CSR) is mandatory under the Companies Act 2013Select the incorrect statement using the codes given below
 - a) 1 only
 - b) 2 only
 - c) **Both 1 and 2**
 - d) Neither 1 nor 2
 3. Consider the following with reference to International Liquid Mirror Telescope (ILMT) recently seen in news.

1. It is for the first time a Liquid Mirror Telescope has been developed.
2. It's the only one to have been developed for astronomy research

Choose the correct statement using the codes given below

- a) 1 only
 - b) 2 only**
 - c) Both 1 and 2
 - d) Neither 1 nor 2
4. Which of the following is not among the treaties commonly referred to as the "five United Nations treaties on outer space"?
- a) The Outer Space Treaty
 - b) The Low Earth Orbit Treaty**
 - c) The Liability Convention
 - d) The Moon Agreement
5. Recently Nagorno-Karabakh Enclave is in news. It is an conflicting area between which two countries?
- a) Azerbaijan and Armenia**
 - b) Israel and Palestine
 - c) Russia and Ukraine
 - d) South Korea and North Korea
6. Consider the following statements with reference to Export Promotion Capital Goods (EPCG) Scheme:
1. It was launched by Ministry of Finance.
 2. It enables import of capital goods that are used in pre-production, production, and post-production without payment of customs duty.
- Which of the statements given above is/are correct?
- a) 1 only
 - b) 2 only**
 - c) Both 1 and 2
 - d) None of the above
7. Recently Dastangoi Tradition is news. It is related to:
- a) Dance
 - b) Singing
 - c) Martial Art
 - d) Story-telling**
8. Consider following statements regarding National Monuments Authority (NMA):
1. It derives its power from The Places of Worships Act, 1991
 2. It comes under the aegis of Ministry of Culture.
- Choose the incorrect code.
- a) 1 only**
 - b) 2 only
 - c) Both 1 and 2
 - d) None of the above