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Supreme Court's Verdict on Demonetisation

Prelims: Supreme court, Constitution Bench, RBI, Section 26(2) of RBI Act.

Mains: Supreme Court's Verdict on Demonetization.

Why in News?

Recently, the [Supreme Court](#) has passed a verdict on the [Demonetisation](#) of currency notes of Rs 500 and Rs 1,000 in a majority 4-1 by a five-judge [Constitution Bench](#).

What are the Rulings of the Verdict?

▪ Majority Ruling:

- The majority held that **Centre's notification dated November 8, 2016 is valid** and satisfies the **test of proportionality**.
- The RBI and the Centre had been in consultation with each other for **six months prior to the November 8 notification issued under Section 26(2)** of the [RBI \(Reserve Bank Of India\) Act, 1934](#).
- The statutory procedure under Section 26(2) of the RBI Act was not violated merely because the **Centre had taken the initiative to "advise" the Central Board to consider recommending** demonetisation.
- The government was empowered under the **provision to demonetise "all series" of banknotes**.
- On hasty decision, the court said such measures **undisputedly are required to be taken with utmost confidentiality** and speed. If the news of such a measure is leaked out, it is **difficult to imagine how disastrous the consequences would be**.
- Demonetisation was done for the **"proper purposes" of eliminating fake currency, black money and terror financing**.

▪ Minority Ruling:

- The government could have issued a notification under Section 26(2) of the RBI Act only if the RBI had initiated the proposal to demonetise by way of a recommendation.
- Therefore, the government's notification issued **under Section 26(2) of the RBI Act** was unlawful.
- In cases in which the government initiates demonetisation, it should take the opinion of the RBI. The opinion of the Board should be **"independent and frank"**.
- If the Board's opinion was in the negative, the Centre could still go forward with the demonetisation exercise, but only by **promulgating an ordinance or by enacting a parliamentary legislation**.
- Describing the Parliament as the "nation in miniature", "without the Parliament, democracy will not thrive".

What is the Test of Proportionality?

- The test of proportionality is **a commonly employed legal method used by courts around the world**, typically constitutional courts, to decide cases where two or more legitimate rights clash.
- When such cases are decided, **one right typically prevails** at the **expense of the other and the court thus has to balance the satisfaction of some rights** and the damage to other rights resulting from a judgment.
- The principle of proportionality ordains that the **administrative measure must not be more drastic than is necessary for attaining the desired result**.

What was Demonetisation?

▪ About:

- On **8th November 2016**, the government announced that the **largest denomination of Rs 500 and Rs 1000 were demonetised with immediate effect ceasing to be a legal tender**.
- It is the **act of stripping a currency unit of its status as legal tender or fiat money**.
- It occurs whenever **there is a change of national currency and the current form or forms of money** is pulled from circulation and retired, often to be replaced with new notes or coins.

▪ Objectives of Demonetisation:

- To **discourage the use of high-denomination notes for illegal transactions** and thus **curb the widespread use of black money**.
- To encourage [digitisation of commercial transactions](#), [formalise the economy](#) and so, boost government tax revenues.
 - The formalisation of the economy means **bringing companies under the**

regulatory regime of government and subject to laws related to manufacturing and income tax.

▪ **Operation Clean Money:**

- It was launched by the Income Tax Department (CBDT) for e-verification of large cash deposits made during the period from **9th November to 30th December 2016**.
- The programme was launched on 31st January 2017 and entered into the second phase in May 2017.
- It aimed to verify cash transaction status (exchange/savings of banned notes) of taxpayers during the demonetisation period and to take tax enforcement action if transactions do not match the tax status.

▪ **Impact of the Move:**

- Currency with the public stood at Rs. 17.97 lakh crore on **4th November 2016** and declined to Rs 7.8 lakh crore in January 2017 after demonetisation.
- Demands fell, businesses faced a crisis and **gross domestic product (GDP) growth declined** nearly 1.5%, with many small units and shops being shut down and it also created a **liquidity shortage**.
 - Liquidity shortages or crises arise when financial institutions and industrial companies scramble for, and cannot find the cash they require to meet their most urgent needs or undertake their most valuable projects.

Way Forward

- Demonetization was **an expeditious move to boldly counter the black money** and parallel economy (illegal economy, such as money laundering, smuggling, etc.) threat with visible impact on how the government's policies are perceived in international circles of economic power.
- This move by the government **achieved greater significance for a globally connected India** as it showed boldness in tackling an issue which has remained a thorn in the growth success story of this generation.

[Source: IE](#)

Road Accidents in India

For Prelims: Road Safety, Anti-lock braking system, Brasilia Declaration on Road Safety, National Highways Authority of India Act, Motor Vehicles Amendment Act, 2019.

For Mains: Road Safety: Reasons, Impacts, Steps that can be taken.

Why in News?

As per the Minister of Road Transport and Highways the **Indian road accident scenario, with 415 deaths and many injured every day, is more severe than Covid-19**.

Road Accidents in India: What's the Scenario?

- **Present Situation:**
 - **Over 1.5 lakh people died from road accidents in 2021**, and this has been the trend for several years.
 - According to [National Crime Records Bureau \(NCRB\)](#) data from 2021, driving under the influence of drugs/alcohol **contributed to 1.9% of deaths from accidents**.
 - Further, nearly **90% of deaths on the road were due to speeding, overtaking, and dangerous driving**.
 - According to the [World Bank's](#) data from 2019, **India ranked first among the top 20 countries for road accidents**.
- **Causes:**
 - **Infrastructural Deficits:** Pathetic conditions of roads and vehicles, poor visibility and poor road design and engineering – including quality of material and construction, especially a single-lane with a sharp curve.
 - **Negligence and Risks:** Over speeding, driving under the influence of alcohol or drugs, tiredness or riding without a helmet, driving without seatbelts.
 - **Distraction:** Talking over mobile phones while driving has become a major cause of road accidents.
 - **Overloading:** To save on the cost of transportation.
 - **Weak Vehicle Safety Standards in India:** In 2014, crash tests carried out by the [Global New Car Assessment Programme \(NCAP\)](#) revealed that some of India's top-selling car models have failed the UN (United Nations)'s frontal impact crash test.
 - **Lack of Awareness:** Regarding the importance of safety features like airbags, [Anti lock Braking system](#) etc.
- **Impacts:**
 - **Economy:**
 - As per the World Bank, **road crashes cost the Indian economy 3 to 5 percent of GDP each year**.
 - **Social:**
 - **The Burden on Households:**
 - Every road accident death causes the depletion of nearly seven months' household income in poor families and pushes the kin of victims into a cycle of poverty and debt.
 - **Vulnerable Road Users (VRUs):**
 - VRUs bear a disproportionately large burden of road crashes and **account for more than half of all road crash deaths** and serious injuries in the country.
 - It is often the poor, especially male road-users of working age, that constitute the category of VRUs.
 - **Gender-Specific Impact:**
 - Women in the families of victims bore the burden across poor and rich households, often taking up extra work, assuming greater responsibilities, and performing caregiving activities.
 - According to World Bank's report **“Traffic Crash Injuries and Disabilities: The Burden on Indian Society, 2021,**
 - About 50% of women were **severely affected** by the decline in their household income after a crash.
 - About 40% of women **reported a change in their working patterns post-accident**, while around 11% reported taking up extra work to deal with the financial crisis.
 - The **income decline for low-income rural households** (56%) was the most severe compared to low-income urban (29.5%) and high-income rural households (39.5%).

What Steps can be Taken in this Regard?

- **Issues with Motor Vehicles (MV) (Amendment) Act, 2019:** The [MV \(Amendment\) Act, 2019](#) increased the existing fines for violating traffic rules which were criticised on the pretext that the (fine) paying capacity of an average Indian was still limited.
 - Also, **only a few cases of traffic violations are contested by the accused in a court**

of law.

- Therefore, the expected impact of the deterrent provisions of the amended law could not be realised on ground.
- **Road Safety Zones:** It is proposed to set up smaller areas, parts of major roads and highways, as “**ideal**” road safety zones. These zones will incubate locally suitable, comprehensive safe road practices.
- **A New Administrative Structure:** The administrative structure for the implementation of road safety can be set up in three tiers:
 - **Tier 1:** It would be the **Managing Group (MG)**, which would look after day-to-day operations and would be autonomous and financially empowered.
 - **Tier 2:** It would have **district-level monitoring**. This is where urgent solutions would be sought, budgetary allocations made, and review modes fixed. It would also ensure adherence to targets.
 - **Tier 3:** It would have **top management and control**, represented at the level of the Union or state government.
- **Speed-Detection Devices:** Installation of proven speed detection devices such as Radar and speed detection camera systems can be introduced.
 - **Chandigarh and New Delhi have already implemented the service of speed detection devices** such as digital still cameras (Chandigarh), speed cameras (New Delhi), and Radar gun (New Delhi) in traffic control.
 - **Radar Gun is a handheld device used by traffic police** to estimate the speed of a passing vehicle.
- **Improved Safety Measures:** Speed humps, raised platforms, Roundabouts, and optical markings can reduce road accidents to a great extent.
- **Better Centre-State Coordination:** It is a high time that we realise that lives cannot be lost at the cost of poor enforcement of traffic laws.
 - It is **important for the States and the Centre to be on the same page** in improving and strengthening the infrastructure of States by enabling more funds.
 - Merely and only fixing targets is not a pragmatic approach to reducing road accident fatalities. **Putting dedicated efforts into achieving those targets is also required.**

What are the Initiatives Related to Road Safety?

- **Global:**
 - **Brasilia Declaration on Road Safety (2015):**
 - The declaration was signed at the second Global High-Level Conference on Road Safety held in Brazil. India is a signatory to the Declaration.
 - The countries plan to achieve [Sustainable Development Goal 3.6](#) i.e., to halve the number of global deaths and injuries from road traffic accidents by 2030.
 - [Decade of Action for Road Safety 2021-2030:](#)
 - The [UN General Assembly](#) adopted resolution "Improving global road safety " with the ambitious target of preventing at least **50% of road traffic deaths and injuries by 2030**.
 - The Global Plan aligns with the [Stockholm Declaration](#), by emphasizing the importance of a holistic approach to road safety.
 - **The International Road Assessment Programme (iRAP) :**
 - It is a registered charity dedicated to saving lives through safer roads.
- **India:**
 - [Motor Vehicles Amendment Act, 2019:](#)
 - The Act **hikes the penalties for traffic violations, defective vehicles, juvenile driving, etc.**
 - It provides for a **Motor Vehicle Accident Fund**, which would provide compulsory insurance cover to all road users in India for certain types of accidents.
 - It also **provides for a National Road Safety Board**, to be created by the Central Government.
 - [The Carriage by Road Act, 2007:](#)
 - The Act provides for the **regulation of common carriers, limiting their liability and declaration of the value of goods** delivered to them to determine their liability for loss of, or damage to, such goods occasioned by the negligence or

criminal acts of themselves, their servants or agents and for matters connected therewith or incidental thereto.

- **The Control of [National Highways \(Land and Traffic\) Act, 2000:](#)**
- The Act provides for the control of land within the National Highways, right of way and traffic moving on the National Highways and also for removal of unauthorized occupation thereon.
- [National Highways Authority of India Act, 1998:](#)
- The Act provides for the constitution of an authority for the development, maintenance and management of NHs and for matters connected therewith or incidental thereto.

[Source: IE](#)

National Exit Test

For Prelims: National Medical Commission, National Medical Commission Act, 2019, NExT,

For Mains: Significance of replacing the Indian Medical Council with National Medical Commission.

Why in News?

Recently, the [National Medical Commission \(NMC\)](#) issued the proposed draft regulations related to the [National Exit Test \(NExT\)](#).

What is the Objective of the Regulation?

- To provide **consistency across the nation in the summative evaluation** with regard to the minimum common standards of education and training for a medical graduate.
- The objective of the NExT is to **improve the quality of healthcare in India** by ensuring that **all doctors have a minimum level of competency and knowledge** before they begin practicing medicine.

What is National Exit Test?

- The **NExT** is a medical licensing exam that is designed to assess the competency of medical graduates.
- **Students who received their medical degrees from NMC** approved medical institutions and overseas students also **will have to qualify the National Exit Test**.
- To register for medical practice in India, they must pass **the NExT** test.
- This centralized common exam will be conducted by a body formed by the commission for this purpose.
 - **National Medical commission (Amendment) Bill, 2022**, proposes an autonomous board, '**Board of Examinations in Medical Sciences**', which, when comes to effect, will be responsible for holding the NExT exam.
 - Currently, the **National Board of Examinations in Medical Sciences (NBEMS)** is responsible for holding exams like **NEET PG** (National Eligibility cum Entrance Test Postgraduate), **Foreign Medical Graduate Examination (FMGE)**.
- NExT will take the place of tests like **FMGE** and **NEET PG**.
- The NExT will comprise two separate exams called 'Steps'.

Who is Eligible to Appear in the NExT?

- All the students who have completed the **final MBBS course** from a **Commission-recognised medical college** would be eligible to appear in the exam.
- There is **no restriction in the number of attempts** provided that the candidate passes both the steps within **10 years** of joining **MBBS**.
- Just by clearing the **NExT** exam the foreign medical graduates will get licentiate to become practicing doctors.

What is the National Medical Commission?

- **About:**
 - The **National Medical Commission (NMC)** is a **statutory body** in India that was established in **2019** by the Indian government to replace the **Medical Council of India (MCI)**.
 - The **NMC** has been constituted by an act of Parliament known as **National Medical Commission Act, 2019**
 - The **NMC** is a regulatory body for the medical education sector in India.
- **Mission and Vision:**
 - The Aim of the **National Medical Commission** are to
 - Improve access to quality and affordable medical education.
 - Ensure availability of adequate and high quality medical professionals in all parts of the country.
 - Promote equitable and universal healthcare that encourages community health perspective and makes services of medical professionals accessible to all the citizens.
 - Encourages medical professionals to adopt the latest medical research in their work and to contribute to research.
 - Objectively assess medical institutions periodically in a transparent manner.
 - Maintain a medical register for India.
 - Enforce high ethical standards in all aspects of medical services.
 - Have an effective grievance redressal mechanism.
 - It also has the authority to **regulate fees** for **medical courses** and to conduct inspections of medical colleges to ensure that they meet the necessary standards.

[Source: IE](#)

Currency in Circulation

Why in News?

Nearly six years and two months after the government announced **demonetisation** in 2016, currency with the public is at a new high (74% increase from the days before demonetisation was announced).

- Currency with the public is arrived at after **deducting cash with banks from total Currency in Circulation**.
- Cash in the system has been steadily rising, even though the government and the **Reserve Bank of India (RBI)** pushed for a “less cash society”, digitisation of payments and slapped restrictions on the use of cash in various transactions.

What is Currency in Circulation?

- Currency in circulation **refers to cash or currency within a country that is physically used to conduct transactions** between consumers and businesses.
- Currency in circulation is an important component of a country's [money supply](#).
- Monetary authorities of **central banks pay attention to the amount of physical currency** in circulation because it represents one of the most liquid asset classes.
- Currency in Circulation includes **notes in circulation, rupee coins and small coins**.
- The RBI has the **sole right to issue currency notes**. The Government of India is the issuing authority of coins and supplies coins to the Reserve Bank on demand.

What is Money Supply?

- The **total stock of money in circulation** among the public at a particular point of time is called money supply.
 - It **needs to be noted that total stock of money is different from total supply of money**.
 - Supply of money is **only that part of total stock of money** which is held by the public at a particular point of time.
- The **circulating money involves the currency, printed notes, money in the deposit accounts and in the form of other liquid assets**.
- RBI publishes figures for four alternative measures of money supply, viz. M1, M2, M3 and M4.
 - $M1 = CU + DD$
 - $M2 = M1 + \text{Savings deposits with Post Office savings banks}$
 - $M3 = M1 + \text{Net time deposits of commercial banks}$
 - $M4 = M3 + \text{Total deposits with Post Office savings organisations (excluding National Savings Certificates)}$
- CU is currency (notes plus coins) held by the public and DD is net demand deposits held by commercial banks.
- The word 'net' implies that only deposits of the public held by the banks are to be included in money supply.
 - The interbank deposits, which a commercial bank holds in other commercial banks, are not to be regarded as part of money supply.
- **M1 and M2** are known as **narrow money**. **M3 and M4** are known as **broad money**.
- These gradations are in decreasing order of liquidity.
 - M1 is most liquid and easiest for transactions whereas M4 is least liquid of all.
 - M3 is the most commonly used measure of money supply. It is also known as aggregate monetary resources.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q1. Which of the following measures would result in an increase in the money supply in the economy? (2012)

1. Purchase of government securities from the public by the Central Bank
2. Deposit of currency in commercial banks by the public
3. Borrowing by the government from the Central Bank
4. Sale of government securities to the public by the Central Bank

Select the correct answer using the codes given below:

- (a) 1 only
- (b) 2 and 4 only
- (c) 1 and 3 only
- (d) 2, 3 and 4

Ans: (c)

- In case of public depositing money with the central bank and government selling its securities to the public, the money supply in the economy decreases. Hence, 2 and 4 are not correct.
- Ways to Increase the Money Supply in the Economy
 - Printing more money;
 - Reducing interest rates;
 - Quantitative easing;
 - Reduce the reserve ratio for lending;
 - Central Bank buying government securities; hence, 1 is correct.
 - Expansionary fiscal policy;
- The borrowing by the government from the Central Bank also results in an increase in money supply in the economy. Hence, 3 is correct. Therefore, option (c) is the correct answer.

Q2. If you withdraw `1,00,000 in cash from your Demand Deposit Account at your bank, the immediate effect on aggregate money supply in the economy will be (2020)

- (a) to reduce it by `1,00,000
- (b) to increase it by `1,00,000
- (c) to increase it by more than `1,00,000
- (d) to leave it unchanged

Ans: (d)

[Source: IE](#)

Mural Art

Why in News?

Recently, the Wall of Peace, a **great work of modern mural art on the 700-foot long compound wall** of Government Vocational Higher Secondary School at Cherpulassery (Kerala), was inaugurated.

What is Special about Mural Painting?

- Indian Mural Paintings are **paintings made on the walls of caves and palaces**.
- The earliest evidence of the murals is the **beautiful frescoes painted on the caves of [Ajanta and Ellora](#)**, the Bagh caves and Sittanvasal cave.
- In the old scripts and literature, **there was much evidences of mural paintings**.
 - According to Vinaya Pitaka, **the noted courtesan of Vaishali - Amrapali employed painters to paint the kings**, traders and merchants of that time on the walls of her palace.

What is the Technique of Indian Wall Paintings?

- The **technique and process of making Indian wall paintings has been discussed in the Vishnudharamotaram**, a Sanskrit text of the 5th/6th century CE.
- The process of these paintings **appears to have been the same in all the early examples** that have survived with an only exception in the Rajarajeshwara temple at Tanjore which is supposed to be done in a true fresco method over the surface of the rock.
- Most of the colours were locally available.
- Brushes were made up from the hair of animals, such as goat, camel, mongooses, etc.
- The ground was coated with an exceedingly thin layer of lime plaster over which paintings were drawn in water colours.
- In the **true fresco method, the paintings are done when the surface wall is still wet**, so that the pigments go deep inside the wall surface.
- The **other method of painting which was followed in most of the cases of Indian painting is known as tempora**.
 - It is a method of painting on the lime plastered surface which has been allowed to dry first and then drenched with fresh lime water.
 - On the surface, thus obtained, the artist proceeded to sketch.
 - The **principal colours in use were red ochre, vivid red (vermilion), yellow ochre, indigo blue, lapis lazuli, lamp black (Kajjal), chalk white, terraverte and green**.

What is a Mural?

- A mural is **any piece of artwork that is painted or applied directly on a wall**.
- More broadly, **mural art also appears on ceilings or any other large permanent surface**.
- Mural paintings **usually have the distinguishing characteristic of having the architectural elements** of the space they are painted on being harmoniously incorporated into the picture.
- There are **many techniques used for mural painting, of which the fresco is just one**.
- A mural, therefore, is a general term for a wall painting, whilst a fresco is a specific term.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q1. The well-known painting “Bani Thani” belongs to the (2018)

- (a) Bundi school
- (b) Jaipur school
- (c) Kangra school
- (d) Kishangarh school

Ans: (d)

- **Kishangarh School:**
 - Bani Thani painting belongs to the Kishangarh School. Kishangarh School (18th century) of Indian painting emerged in the Princely State of Kishangarh (Central Rajasthan).

▪ **Kangra School:**

- Around mid-18th century, as forces of Nadir Shah (1739) and Ahmad Shah Abdali (1744-1773) pillaged the Mughal capital of Delhi and surrounding areas, the birth of the Kangra School of painting at Haripur-Guler under the patronage of Raja Govardhan Chand (1744-1773) took place as he provided asylum to refugee artists trained in the Mughal style of painting.

▪ **Bundi School:**

- Between 17th-19th century, Bundi School of painting developed in the Princely State of Bundi and its neighbouring principality of Kotah (now Kota) both in present-day Rajasthan.

▪ **Jaipur School:**

- As the rulers of Jaipur (Amer) Princely State had close affiliation with the Mughals, the art which developed between the late 16th and early 18th century had syncretic elements of both Rajasthani style (which predominated the art style between 16th-17th century) and Mughal style.

Q2. Kalamkari painting refers to (2015)

(a) a hand-painted cotton textile in South India

(b) a handmade drawing on bamboo handicrafts in North-East India

(c) a block-painted woollen cloth in Western Himalayan region of India

(d) a hand-painted decorative silk cloth in NorthWestern India

Ans: (a)

Exp:

- Kalamkari is an ancient style of **hand painting done on cotton or silk fabric** with a tamarind pen using natural dyes in the South Indian States of Telangana and Andhra Pradesh.
- The word Kalamkari is derived from a Persian word where 'Kalam' means pen and 'Kari' refers to craftsmanship.
- This art involves 23 tedious steps of dyeing, bleaching, hand painting, block printing, starching, cleaning and more.
- Motifs drawn in Kalamkari span from flowers, peacock, paisleys to divine characters of Hindu epics like Ramayana and Mahabharata.
- Nowadays, this art is primarily done to create Kalamkari saris. Therefore, option (a) is the correct answer.

Q3. Consider the following historical places: (2013)

1. Ajanta Caves
2. Lepakshi Temple
3. Sanchi Stupa

Which of the above places is/are also known for mural paintings?

(a) 1 only

(b) 1 and 2 only

(c) 1, 2 and 3

(d) None

Ans: (b)

Exp:

Ajanta Caves:

- The **early mural paintings may be assumed to be the prototypes of the carved and painted picture galleries** of the subsequent periods of the Buddhist art, such as in the painted cave temples of Ajanta in Maharashtra.

- Mural paintings are found in the caves of Ajanta, Bagh, Sittanavasal, Armamalai cave (Tamil Nadu), Ravan Chhaya rock shelter, Kailasanatha temple in Ellora caves. **Hence, 1 is correct.**

Lepakshi Temple:

- Located on a low, rocky hill called Kurmasailam (which translates to tortoise hill in Telugu) in southern Andhra Pradesh, the Lepakshi temple was built by the brothers, Virupanna and Veeranna, who were initially in the service of the Vijayanagar rulers in 1583.
- It is famed for its Hanging Column or Pillar, a monolithic Nandi (4.5 m high and 8.23 m long) and **finest specimens of mural paintings.**

Lepakshi Temple:

- Commissioned by the Mauryan Emperor Ashoka in 3rd century BC, it is a simple hemispherical brick structure built over the relics of the Buddha with four Torana (ornamental gateways).
- It also has stone reliefs inspired from the life of the Buddha and pillar having central anta capital with many rosettes, beads-and-reels, as well as a central palmette design. **It does not have any mural paintings. Hence, 3 is not correct.**

Q4. There are only two known examples of cave paintings of the Gupta period in ancient India. One of these is paintings of Ajanta caves. Where is the other surviving example of Gupta paintings? (2010)

- (a) Bagh caves
- (b) Ellora caves
- (c) Lomas Rishi cave
- (d) Nasik caves

Ans: (b)

- Bagh caves are situated in the Vindhya hills of Madhya Pradesh. They are an excellent example of Buddhist art and architecture in India. The caves have both Chaityas and Viharas. The Bagh caves were quarried during the 5th-6th century AD, which corresponded to the late stages of Buddhism in India.
- The **Gupta period is considered as the golden age of art and architecture in India.** The Gupta rulers were great patrons of arts, literature, and scholars. **The Ajanta and Ellora caves were carved during the reign of the Gupta empire.** They contain paintings of both Hindu and Buddhist themes.
- The Lomas Rishi cave is a man-made cave in the Barabar and Nagarjuni hills of Bihar. It was built during the Ashokan period of the Mauryan Empire in the 3rd century BC.
- The Nasik caves are a group of 24 caves carved during the 1st century BC - 3rd century AD. Additions were made during the 6th century AD to reflect the ongoing changes in the Hinayana Buddhism.
- The inscriptions on the caves point that the different ruling dynasties have contributed to the construction of the caves apart from the donations made by local merchants and lords. The three ruling dynasties mentioned on the caves are - the Western Kshatrapas, the Satavahanas and the Abhiras. **Therefore, option (b) is the correct answer.**

[Source: TH](#)

Virovore

Why in News?

Researchers have found the first known "**Virovore,**" or **organism that eats viruses.**

- The new findings may change our **understanding of the role viruses play in the food chain at a microscopic level.**

What is Virovore?

- It has been identified as an **actual species of protist that feasts on viruses.**
- These virus-eating species of protists — which are their own kingdom on the tree of life and are not an animal, plant, or fungi — are now classified as Virovires.
- It is a species of **Halteria - microscopic ciliates** that populate freshwater worldwide.
 - The microbe Halteria is a common genus of protist known to flit about as its hair-like cilia propel it through the water.
- They're made up of nucleic acids, nitrogen, and phosphorus. It can eat **huge numbers of infectious chloroviruses that share their aquatic habitat.**
 - Chloroviruses are known to infect microscopic green algae.
- These organisms can sustain themselves **with viruses, consuming many and growing in size.**
- A virus-only diet, termed "virovory," is enough to fuel **the physiological growth and even population growth of an organism.**

[Source: HT](#)

Fly Ash

Why in News?

Recently, the Union Ministry of Environment, Forests and Climate Change (MoEF&CC) clarified the **compliance dates for the complete utilisation of fly ash for Thermal Power Plants (TPP)** in a new notification.

What is Fly Ash?

- **About:**
 - Fly ash is an **unwanted unburnt residue of coal combustion in a coal thermal power plant.**
 - It is **emitted along with flue gases** during the burning of coal in a furnace and collected using the electrostatic precipitators.
 - The **fly ash collected with the help of precipitators is converted into a wet slurry** to minimise fugitive dust emissions.
 - It is then transported to the scientifically designed ash ponds through slurry pipelines.
- **Composition:**
 - Composition of fly ash **depends upon the composition of coal being burnt.** It may contain Beryllium, Arsenic, unburnt Carbon, Silicon Oxides, Dioxins, aluminium oxide, ferric oxide, calcium oxide, etc.
 - These elements are **severe environmental pollutants.**
- **Properties:**
 - Resemble Portland cement **but is chemically different.**
 - Portland cement is a binding material in the form of a finely ground powder that is manufactured by burning and grinding a mixture of limestone and clay.
 - Its chemical composition includes calcium silicates, calcium aluminate and calcium aluminoferrite.

- Exhibit cementitious properties.
 - A cementitious material is one that hardens when mixed with water.
- **Uses:** It is **used in concrete and cement products, road base, metal recovery**, and mineral filler among others.
- **Harmful Effects:** Fly ash **particles are toxic air pollutants**. They can trigger heart disease, cancer, respiratory diseases and stroke.
 - When combined with water they cause leaching of heavy metals in ground water.
 - It also pollutes the soil, and affects the root development system of trees.
 - Gross under-utilisation of this by-product over the years has led to the accumulation of 1,670 million tonnes of fly ash according to the Summary of Ash Generation and Utilisation during 2020-2021 by the Joint Committee earlier constituted by the NGT.
- **Related Initiatives:**
 - Earlier in 2021, [National Thermal Power Corporation \(NTPC\)](#) Limited had invited [Expression of Interest \(EOI\)](#) for sale of fly ash.
 - NTPC has also **collaborated with Cement manufacturers around the country to supply Fly Ash**.
 - [Pradhan Mantri Awas Yojana \(Urban\)](#) has focused on new construction technologies such as using fly ash bricks that are innovative, and environmentally friendly.
 - Even state governments have come out with their Fly ash utilisation policies, e.g., Maharashtra was the first state to adopt the policy.
 - A web portal for monitoring of fly ash generation and utilisation and a mobile based application titled **“ASHTRACK”** has been launched by the Government.
 - [Goods and Services Tax \(GST\)](#) rates on fly ash and its products have been reduced to 5%.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q1. With reference to ‘fly ash’ produced by the power plants using coal as fuel, which of the following statements is/are correct? (2015)

1. Fly ash can be used in the production of bricks for building construction.
2. Fly ash can be used as a replacement for some of the Portland cement contents of concrete.
3. Fly ash is made up of silicon dioxide and calcium oxide only, and does not contain any toxic elements.

Select the correct answer using the code given below:

- (a) 1 and 2
- (b) 2 only
- (c) 1 and 3
- (d) 3 only

Ans: (a)

Q2. Consider the following: (2011)

1. Carbon dioxide
2. Oxides of Nitrogen
3. Oxides of Sulphur

Which of the above is/are the emission/emissions from coal combustion at thermal power plants?

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (d)

- Coal based power plants are the major contributor of the atmospheric air pollution and contribute significantly to the global warming and adverse health effects which can ultimately lead to diseases like lung cancer.
- Toxic compounds released from the burning of coal include:
 - Oxides of Carbon (CO_x): Carbon Dioxide and Carbon Monoxide; **hence, 1 is correct.**
 - Oxides of Nitrogen (NO_x); **hence, 2 is correct.**
 - Oxides of Sulphur (SO_x); **hence, 3 is correct.**
 - Fly Ash.
- Trace elements like Mercury, Cadmium and lead are also emitted which are also hazardous for health. **Therefore, option (d) is the correct answer.**

[Source: DTE](#)

Rapid Fire Current Affairs

Savitribai Phule Birth Anniversary

Recently the Prime Minister of India paid homage to **Savitribai Phule** (1831-97) on her **191st birth anniversary**. She was a **19th century social reformer** who worked in the field of women education.

Along with her husband Jyotiba Phule, she established a **school for girls, Shudras and Ati-Shudras in Poona (1848)** and started **Balhatya Pratibandhak Griha** - home for the prevention of infanticide in their own house. She also **established Mahila Seva Mandal in 1852** to raise awareness about women's rights.

She published **Kavya Phule in 1854** and **Bavan Kashi Subodh Ratnakar in 1892**. In 1873, the Phules set up the **Satyashodhak Samaj** to bring social equity. Phules were an extraordinary couple in India's social & educational history.

Read More - [Savitribai and Jyotiba Phule](#)

Rani Velu Nachiyar

The Prime Minister of India has paid tributes to **Rani Velu Nachiyar** (3 Jan 1730 – 25 Dec 1796) on her birth anniversary. She was the **first queen to fight against the British colonial power** in India (and son of **Nawab of Arcot**) in 1780s.

Rani Velu Nachiyar, **known by Tamils as Veeramangai**, was the **princess of Ramnad Kingdom of Ramanathapuram (TN)**. Along with proficiency in languages like French, English and Urdu, she was **trained in martial arts like Valari, Silambam**, horse riding and archery.

Upon her husband - **Muthuvaduganathaperiya Udaiyathevar's** death, she succeeded him in **1780 as the Queen of Sivagangai (TN)**.

Read More - [Women Heroes of India's Freedom Struggle](#)

Asia Pacific Postal Union

India is all set to assume the leadership of Asian Pacific Postal Union (APPU). Vinaya Prakash Singh was **elected as the Secretary General** of the APPU for a tenure of 4 years (from Jan 2023). This

is the **first time an Indian is leading** an international organization in the postal sector.

APPU, **headquartered in Bangkok** (Thailand), is an intergovernmental organization of **32-member countries of the Asian-Pacific region**. It is the **only Restricted Union** of the **Universal Postal Union (UPU)** (a **UN specialised agency**) in this region. APPU aims to extend, facilitate and improve postal relations between member countries and to promote cooperation in the field of postal services.

The **Asia Pacific region generates around half of the global mail volume and has around one-third of the global postal human resource**.

Read More - [Universal Postal Union](#)

Lula Sworn in as Brazil's President

Luiz Inacio Lula da Silva has been sworn in as the new president of Brazil replacing **Jair Bolsonaro**. This is the 3rd time he has held the country's highest office (earlier - January 2003 - January 2011).

India's relations with Brazil are about 5 centuries old, however a strategic partnership was established only in 2006. The two countries are common members to forums like **BRICS, IBSA, G4** and **G20** and have a pivotal role as leaders of the **Global South or South-South cooperation**. Recently the two countries also participated in **7th edition of IBSAMAR exercise**.

Read More - [India-Brazil Relations](#)