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# UPSC PRELIMS 2025

## GS PAPER 1 SET - B

# Hit Ratio 56%

Few of Our IAS/ IPS / KAS Rank Holders From Karnataka Since 24 Years



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## 1. Alternatives to Power train vehicles

<https://universalinstitutions.com/cutting-co2-emissions-in-indias-transport-sector-by-71-by-2050-strategies-and-impacts/>

## 2. About Drones and Unmanned Aerial Vehicles (UAVs):

### What Are UAVs?

- **Remotely operated or autonomous aircraft** with no onboard pilot.
- Used in **military, commercial, and industrial applications**.
- Equipped with **sensors, cameras, and navigation systems** for various tasks.

### Types of UAVs:

- **Fixed-Wing UAVs** – Long-range surveillance & mapping.
- **Rotary-Wing UAVs** – VTOL, search & rescue, photography.
- **Hybrid UAVs** – Combines fixed & rotary-wing benefits.
- **Combat Drones** – Military strikes, intelligence gathering.
- **Power Source:** Battery, fuel, hybrid, hydrogen, solar—UAVs use diverse energy sources.
- **Commercial & Delivery Drones** – Logistics, photography, agriculture.

<https://universalinstitutions.com/evolving-role-of-uavs-in-modern-military-operations/>

## 3. Electric Vehicle batteries

<https://universalinstitutions.com/lithium-an-overview/>

## 7. Recent Advancements & Breakthroughs

- **Longer Qubit Coherence** – Atom Computing and ColdQuanta improved qubit stability for longer computations.
- **High-Fidelity Qubit Control** – IBM and Quantinuum enhanced qubit accuracy, reducing errors.
- **Error Correction Progress** – Google's **Willow chip** introduced self-correcting quantum systems.
- **Topological Qubits** – Microsoft's **Majorana-1** boosts stability, minimizing error correction needs.
- **Diverse Qubit Modalities** – Superconducting circuits, trapped ions, and photonic qubits create a multi-approach ecosystem.

<https://universalinstitutions.com/niti-aayog-warns-of-quantum-tech-risks-to-security/>



- **Diverse Qubit Modalities** – Superconducting circuits, trapped ions, and photonic qubits create a multi-approach ecosystem.

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## 9. Important Facts About Viruses

1. **Bacterial Infection:** Certain viruses, called **bacteriophages**, infect and destroy bacteria.
2. **Host-Dependent:** Viruses cannot reproduce independently—they must infect living cells.
3. **Cellular Hijacking:** Once inside, they **alter the host's transcriptional processes** to replicate.
4. **Disease-Causing:** Viruses are behind diseases like **HIV, flu, COVID-19, and hepatitis**.
5. **Transmission Methods:** They spread through **air, surfaces, fluids, and vectors**.
6. **Survival in Harsh Environments:** Some persist even in **extreme habitats** like ocean waters.
7. **Microscopic Agents:** They are **smaller than bacteria**, invisible to the naked eye.
8. **Basic Structure:** Comprise **genetic material (DNA/RNA)** inside a **protein coat**.
9. **Body Defense:** The immune system uses **antibodies and killer cells** to fight them.
10. **Control Measures:** **Vaccines and antiviral drugs** help prevent or manage infections.

<https://universalinstitutions.com/hku5-cov-2-a-new-coronavirus-raising-global-concerns/>

## 10. What is Activated Carbon?

Activated carbon is a processed form of carbon with small, low-volume pores that increase surface area for adsorption or chemical reactions. It is widely used in water purification, air filtration, and as a catalyst support.

### Key Findings

- The activated carbon derived from coconut husks shows promise for high-performance super capacitors due to its availability and low cost.
- Prototype supercapacitors using this material are four times more efficient than existing ones.

<https://universalinstitutions.com/coconut-husk-derived-carbon-for-supercapacitors/>



## 12. No Agreement on Climate and Health Declaration:

- India has not signed the "**Declaration on Climate and Health**," a major pledge endorsed by 123 countries at COP-28.
- The declaration emphasizes the need for governments to protect communities and prepare healthcare systems for climate-related health impacts, linking health goals to restrictions on fossil fuel emissions.

<https://universalinstitutions.com/indias-position-at-cop-28-energy-use-and-climate-pledges/>

## 13. MELTING POLAR ICE DUE TO CLIMATE CHANGE IS MAKING EARTH'S DAYS LONGER

### Why in the news?

- Over the last two decades, scientists have observed that the Earth's rotation rate has slowed by **approximately 1.3 milliseconds per century**.
- Due to the ongoing melting of polar ice caps, climate change is now contributing to a **slower rotation of the Earth**.

<https://universalinstitutions.com/melting-polar-ice-due-to-climate-change-is-making-earths-days-longer/>

14. Under the Paris Agreement, countries must update their climate action plans (NDCs) every five years. Article 6 enables voluntary cooperation through carbon markets and non-market approaches, allowing emission trading and promoting technology transfer. It ensures transparency, boosts ambition, and supports developing nations like India in achieving low-carbon, sustainable development goals.

<https://universalinstitutions.com/nine-years-on-paris-agreement-faces-growing-frustration/>

16. **Direct Air Capture (DAC)** is a climate technology that removes carbon dioxide directly from the atmosphere. The captured CO<sub>2</sub> can be stored underground (carbon sequestration), used in synthetic fuels for aviation, or utilized in industrial applications like food processing and plastic production, supporting low-carbon development and circular carbon economies.

<https://universalinstitutions.com/air-pollution-control-a-climate-dilemma/>



## 21. Raja Ram Mohan Roy

- He was born in 1772 and is considered as the first 'modern man of India'.

He studied the Bible as well as Hindu and Muslim religious texts. He had excellent command over many languages including English, Sanskrit, Persian, Arabic, French, Latin, Greek and Hebrew.

- Reestablished the Atmiya Sabha in 1815, which developed into Brahmo Samaj in 1828. The objective of the organization was to purify Hinduism of medieval irrelevant practices and to preach monotheism shaped by Vedantic philosophy.
- Raj Rammohan Roy is most remembered for helping Lord William Bentinck to declare the practice of Sati a punishable offence in 1829.
- He also protested against the child marriage and female infanticide and favoured the remarriage of widows, female education and women's right to property.
- In 1817, he founded the Hindu College (now Presidency College, Calcutta) along with David .Hare, a missionary.
- Rammohan Roy started the first Bengali weekly *Samvad Kaumudi* and edited a Persian weekly *Mirat-ul-akhbar*.

<https://universalinstitutions.com/religious-and-social-reform-in-19th-century-india/>

## 22. Non cooperation movement

<https://universalinstitutions.com/discuss-the-contributions-of-m-k-gandhi-to-the-indian-national-movement/>

## 23. Araghatta

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## 24.

In regions once ruled by the Chalukya kings, the Pallava kings emerged as significant patrons of the arts. Mahendravarman I, adorned with titles like Vichitrachitta (curious-minded), Chitrakarapuli (tiger among artists), Gunabhara, Chaityakari (temple builder), and Mattavilasa displayed a profound interest in artistic endeavors. Although only fragments of temple paintings initiated under his patronage remain, one notable creation is the gracefully drawn Panamalai figure of a female divinity. The paintings in the Kanchipuram temple, supported by Pallava king Rajasimha, exhibit round and large faces with rhythmic lines and increased ornamentation compared to earlier periods. The depiction of the torso, reminiscent of earlier sculptural traditions, maintains an elongated form.

<https://universalinstitutions.com/indian-painting/>



## 25. Fa-hien visit to India

**Political and Administrative Insights:** Although not extensively delving into India's political situation, he made observations indicating the Gupta Empire's governance as liberal and prosperous, as he visited India during the reign of Chandragupta II. His writings highlighted the reasonable tax burden, lenient punishments for offenses, free movement of people, and exemptions for religious establishments from taxes.

<https://universalinstitutions.com/q-who-was-fa-hien-what-does-he-say-concerning-india/>

26. Rajendra I also led naval expeditions against the **Sri Vijaya kingdom in southern Sumatra**, promoting trade between the Malaya peninsula and South India.

<https://universalinstitutions.com/early-medieval-period/>

27. Regions and the Rivers flowing Through it.

<https://universalinstitutions.com/themes-in-ancient-history-mahajanapadas/>

29. Village was the smallest unit and was headed by Gramika. Pradeshika was provincial governor. There were other officials like Sthanika, Durgapala, Antapala etc. In the districts, there were other officers like Rajjuka and Yukta to supervise and assist the revenue related works.

<https://universalinstitutions.com/describe-the-administration-during-the-mauryan-period-in-ancient-india/>

30. Gandhi's Contribution towards Indian National movement

<https://universalinstitutions.com/discuss-the-contributions-of-m-k-gandhi-to-the-indian-national-movement/>

31. **Alternate Investment Funds (AIFs)** are privately pooled investment vehicles regulated by SEBI that invest in assets beyond traditional stocks and bonds. These include hedge funds, private equity, venture capital, real estate, and more. AIFs are categorized into:

- **Category I:** Start-ups, SMEs, social ventures (high economic value).
- **Category II:** Private equity, debt funds (no leverage allowed).
- **Category III:** Hedge funds (complex strategies, open to leverage).

AIFs are suitable for high-net-worth individuals seeking portfolio diversification and long-term growth through non-traditional investment avenues.



<https://universalinstitutions.com/investment-models/>

### 32. Understanding How RBI Earns Revenue

The **Reserve Bank of India (RBI)** is India's central banking institution. It is responsible for maintaining **monetary stability**, managing **currency issuance**, regulating the **banking system**, and ensuring **financial stability**. While it is not a profit-seeking body, it still earns **substantial revenue** in the course of its operations.

<https://universalinstitutions.com/money-and-currency-system/>

### 34. BRSR (Business Responsibility and Sustainability Report)

The **BRSR**, introduced by **SEBI** in 2021, is a mandatory ESG disclosure framework for India's top 1000 listed companies. It replaces the Business Responsibility Report (BRR) and covers three sections: general information, ESG policies, and performance on **9 responsible business principles**. BRSR promotes **transparency, sustainability, and investor confidence** by aligning with global standards and India's SDG commitments.

<https://universalinstitutions.com/esg-a-lighthouse-and-a-compass-for-corporation/>

### 36. Initiatives for Critical Minerals:

- **Partnerships:**
  - India-Australia Critical Minerals Investment Partnership.
  - Membership in the **Minerals Security Partnership (MSP)** led by the US.
- **Khanij Bidesh India Ltd. (KABIL):** Identifying and acquiring overseas mineral assets (e.g., lithium brine in Argentina).
- **Legislative Support:** Mines and Minerals (Development and Regulation) **Amendment Act, 2023**, allowing auction of critical mineral areas.

<https://universalinstitutions.com/india-and-us-enhance-critical-mineral-supply-chains/>

37. Bonds are formal contracts to repay borrowed money with interest at fixed intervals. They can be issued by corporations, municipalities, institutions, and governments.



Last in line for dividend payment and in claiming assets during liquidation, after creditors, bondholders, and preference shareholders.

<https://universalinstitutions.com/financial-market-in-india/>

#### 38. Stock Market of India

<https://universalinstitutions.com/financial-market-in-india/>

#### 39. Circular Economy – Concise Explanation

A **Circular Economy** is an economic system aimed at **eliminating waste and continuously using resources**. Unlike the traditional **linear model** (take–make–dispose), it focuses on **reducing, reusing, recycling, and recovering** materials in production and consumption.

<https://universalinstitutions.com/indias-rising-e-waste/>

#### 40. Capital Budget

- The capital budget concerns with capital receipts and expenditures, focusing on creating long-term assets or reducing liabilities. It includes:
- **Capital Receipts:** These are the government's income sources that either reduce assets or increase liabilities, such as loans from the public, foreign borrowings, or proceeds from disinvestments.
- **Capital Expenditure:** Spending aimed at asset creation or liability reduction. It encompasses investments in infrastructure (like roads, bridges), loans provided by the government, and expenditure on defense assets.

<https://universalinstitutions.com/public-finance-budget-and-fiscal-policy/>

#### 41. History of NATO & Its Members

<https://universalinstitutions.com/sweden-to-be-a-nato-member/>

#### 42. World Mountain Ranges

<https://universalinstitutions.com/chapter-6-distribution-of-ocean-and-continents/>



#### 45.Continental Drift Theory

<https://universalinstitutions.com/chapter-6-distribution-of-ocean-and-continents/>

#### 49.Composition of Atmosphere

<https://universalinstitutions.com/chapter-9-climatology-2/>

#### 50.Rashtriya Gokul Mission (RGM)

##### About:

- Launched in **December 2014** for the **development and conservation of indigenous bovine breeds**.
- Continued under the **Rashtriya Pashudhan Vikas Yojana (2021-2026)** with a **budget of ₹2,400 crore**.
- **Nodal Ministry: Ministry of Fisheries, Animal Husbandry & Dairying.**

##### Objectives:

- Enhance **bovine productivity** and **sustainable milk production** using advanced technologies.
- Promote **high genetic merit bulls** for breeding.
- Expand **Artificial Insemination (AI) coverage** with doorstep AI services.
- Encourage **scientific rearing and conservation** of indigenous cattle and buffaloes.

<https://universalinstitutions.com/cabinet-approves-revised-rashtriya-gokul-mission-with-%e2%82%b93400-crore/>

#### 51. Powers & Functions of Panchayats

<https://universalinstitutions.com/having-panchayats-as-self-governing-institutions/>

Also see, <https://universalinstitutions.com/panchayat-governance-in-india/>

#### 52.BIMSTEC

<https://universalinstitutions.com/bimstec-as-key-to-a-new-south-asian-regional-order/>



Also see, <https://universalinstitutions.com/revitalizing-bimstec-enhancing-regional-integration-in-bay-of-bengal/>

## 57. BRICS SUMMIT

<https://universalinstitutions.com/kazan-hosts-16th-brics-summit-highlighting-cultural-diversity/>

Also see, <https://universalinstitutions.com/trump-threatens-brics-with-tariffs-over-currency-alternatives/>

## 58. Institution of Lokpal & Lokayukas

<https://universalinstitutions.com/lokpal-and-lokayuktas/>

## 60. Abhimanyu Mishra,

<https://universalinstitutions.com/gukesh-wins-candidates-becomes-youngest-ever-challenger-for-world-title/>

<https://universalinstitutions.com/gukesh-becomes-youngest-ever-world-chess-champion/>

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**IRS**  
Darshan Gowda J



**IRS**  
Divya



**IRS**  
Dr. Kotraswamy



**IRS**  
Pramod Nayak



**IRS**  
Praveen Karanth



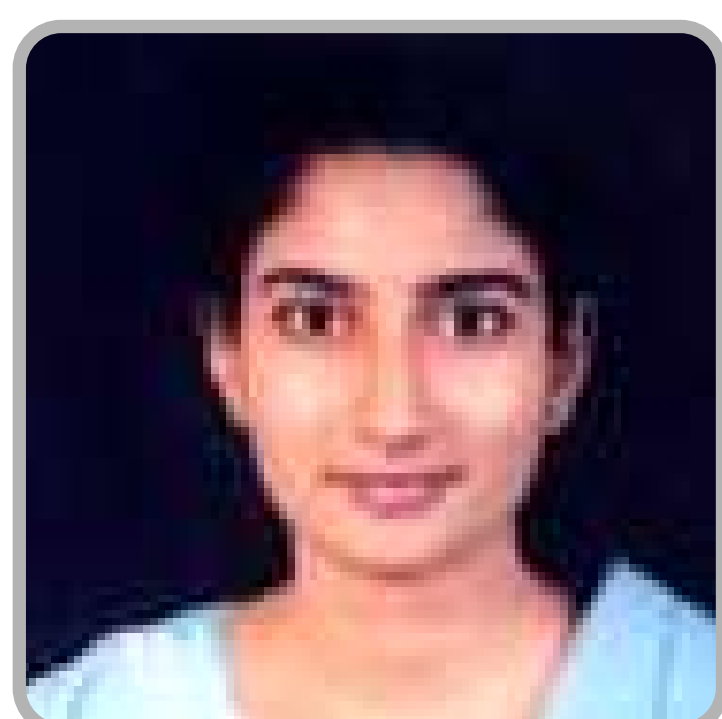
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**IRTS**  
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62. Kavach

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65. Chemicals used in artificial rain

<https://universalinstitutions.com/cloud-seeding/>

66. Pardoning power of the President

<https://universalinstitutions.com/clemency-powers-of-executives-debate-and-implications/>

67. Speaker related question

<https://universalinstitutions.com/bhartruhari-mahtab-appointed-pro-tem-speaker-of-lok-sabha/>

68. Anti-defection Law, 10<sup>th</sup> Schedule related question

<https://universalinstitutions.com/anti-defection-law-3/>

71. INSTC – International North-South Transport Corridor

<https://universalinstitutions.com/give-a-brief-account-on-the-recently-started-international-north-south-transport-corridor-instc/>

76. 15<sup>th</sup> Finance Commission:

<http://universalinstitutions.com/finance-commission/>

77. IBRD – International Bank for Reconstruction and Development

<https://universalinstitutions.com/bretton-woods-institutions/>

79. UPI – International Merchant Payment accepted countries

<https://universalinstitutions.com/cbdc-future-upi-payment-revolution/>

80. PM Surya Ghar Muft Bijli Yojana

<https://universalinstitutions.com/pm-surya-ghar-yojana-free-solar-electricity-revolution/>



81. Related to ordinance

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88. Related to The Constitutional amendments of India

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89. Related to Office of Governor

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92. Related to Dancing Girl' - Mohenjo-daro.

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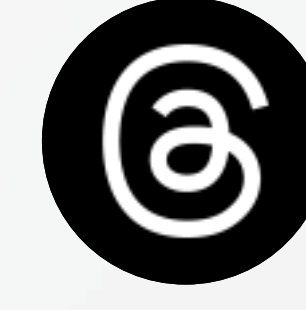
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