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IMPORTANT INSIGHTS

ICMR Study Highlights Rising Carbapenem Resistance and the Growing Health and Economic Burden of Antimicrobial Resistance in India

Recent Developments:

- A recent **Indian Council of Medical Research (ICMR)** study has highlighted that infections caused by **carbapenem-resistant Gram-negative bacteria** are associated with higher mortality and greater antibiotic expenditure than infections caused by drug-susceptible strains.
- The study was conducted through the **ICMR Antimicrobial Resistance Surveillance Network** across **20 tertiary-care hospitals** between April 2022 and April 2025, providing important real-world evidence on resistant infections in Indian healthcare settings.
- Mortality was consistently higher among patients infected with carbapenem-resistant strains of four major Gram-negative pathogens, with the **relative risk of death ranging from 1.16 to 1.43 times** compared with susceptible infections.
- More than **61% of Gram-negative infections** examined in the study were carbapenem-resistant, indicating a serious therapeutic challenge for Indian hospitals.
- The findings are particularly significant because India launched **National Action Plan on Antimicrobial Resistance 2.0 (NAP-AMR 2.0) for 2025–2029** in November 2025, with greater emphasis on inter-sectoral coordination, laboratory capacity, infection prevention, private-sector participation and a **One Health approach**.
- WHO India's 2026 AMR updates continue to emphasise **infection prevention and control, diagnostic stewardship, antimicrobial stewardship and One Health coordination** as central components of AMR containment.

Understanding Antimicrobial Resistance and Carbapenem Resistance:

What is Antimicrobial Resistance?

- **Antimicrobial Resistance (AMR)** occurs when microorganisms evolve mechanisms that reduce or eliminate the effectiveness of medicines used against them, making infections harder to treat and increasing the risks of prolonged illness, transmission, healthcare expenditure and death.
- AMR includes resistance among **bacteria, viruses, fungi and parasites**, although bacterial resistance remains a major focus of India's national AMR strategy.
- **Antibiotic resistance** is the bacterial component of AMR and is particularly important because bacterial infections are common in hospitals and communities.

Why Gram-Negative Bacteria Matter?

- **Gram-negative bacteria** possess a thin peptidoglycan layer and an outer membrane containing **lipopolysaccharides**, causing them to appear pink or red during Gram staining.
- Important Gram-negative pathogens include **Escherichia coli, Klebsiella pneumoniae, Acinetobacter baumannii and Pseudomonas aeruginosa**, which can cause urinary tract, respiratory, wound and bloodstream infections.
- Their outer membrane and multiple resistance mechanisms can make treatment difficult, particularly when they acquire resistance to several antibiotic classes.

Why Carbapenems Are Important?

- **Carbapenems** are broad-spectrum antibiotics used primarily for severe infections caused by multidrug-resistant Gram-negative bacteria.
- They are often reserved for situations where commonly used antibiotics are ineffective, making them an important component of the clinical **last-line treatment arsenal**.
- **Carbapenem resistance** therefore substantially reduces therapeutic options and can force clinicians to rely on newer, more expensive or potentially more toxic alternatives.
- ICMR has separately issued guidance on the diagnosis and management of **carbapenem-resistant Gram-negative infections**, reflecting the clinical importance of this resistance pattern.

Key Findings and Their Significance:

Higher Mortality and Severe Clinical Outcomes:

- The ICMR study found consistently higher mortality among patients with **carbapenem-resistant infections**, but resistance should not be interpreted as the sole independent cause of death.
- Outcomes are also influenced by **severity of illness, delayed effective therapy, source control, comorbidities and patient characteristics**, making carbapenem resistance an important marker of excess mortality rather than an isolated determinant.
- The finding is particularly concerning for **bloodstream infections**, where delayed administration of an effective antibiotic can rapidly worsen clinical outcomes.

Healthcare-Associated Transmission:

- More than **85% of bloodstream infections** in the study were healthcare-associated, highlighting the major role of hospitals in the transmission and amplification of resistant pathogens.
- Risk factors include **invasive medical devices, recent surgery, prolonged hospitalisation, antibiotic pressure, inadequate infection prevention and delayed diagnosis**.
- Therefore, India's AMR challenge cannot be reduced to inappropriate antibiotic consumption alone; healthcare-associated transmission can sustain resistance even when antibiotic prescribing is improved.

Economic Burden:

- Antibiotic expenditure for resistant infections was approximately **1.1 to 2 times higher** than for susceptible infections in the study.
- The researchers considered only antibiotic costs based on medicines available through the **Jan Aushadhi** framework and excluded ICU charges, hospital beds, diagnostics, procedures, supportive care and consultation expenses.
- The actual economic burden is therefore likely to be considerably higher for patients, families and the healthcare system.
- AMR consequently represents both a **public health challenge and an economic development concern**, particularly because prolonged illness increases healthcare expenditure and productivity losses.

Ceftazidime-Avibactam and the Need for Better Evidence:

Emerging Therapeutic Options:

- **Ceftazidime-avibactam** was associated with better outcomes in some resistant **E. coli and Klebsiella pneumoniae** infections, including bloodstream infections.

- However, the study was **observational**, so the findings do not establish definitive superiority over all alternative treatments.
- Differences in disease severity, timing of therapy, resistance mechanisms and treatment selection can influence outcomes, limiting the interpretation of observational comparisons.
- The broader lesson is that India needs **rapid diagnostics and antimicrobial susceptibility testing** to identify the right medicine instead of routinely escalating to newer broad-spectrum antibiotics.

AMR as an Infection-Control Challenge:

Why Antibiotics Alone Cannot Solve AMR?

- Excessive antibiotic use creates **selective pressure**, allowing resistant organisms to survive and multiply, but transmission within healthcare settings can further spread these organisms.
- **Hand hygiene, environmental cleaning, sterilisation, surgical infection prevention and appropriate isolation practices** can reduce transmission without creating additional antibiotic pressure.
- Prevention is therefore often more sustainable than repeatedly developing or deploying stronger antibiotics.

Antimicrobial Stewardship:

- **Antimicrobial stewardship** means ensuring that the right antimicrobial is prescribed for the right patient, infection, dose, route and duration.
- Hospitals should strengthen prescription audits, local antibiograms, diagnostic stewardship, de-escalation of empirical therapy and review of antibiotic duration.
- The objective is not simply to reduce antibiotic consumption but to achieve **effective treatment while minimising unnecessary antimicrobial exposure**.

India's Policy Response and the One Health Approach:

National Action Plan on AMR 2.0:

- India launched **NAP-AMR 2.0 (2025–2029)** to address gaps identified during implementation of the first national plan and strengthen coordinated action across sectors.
- The updated framework provides **specific action plans, timelines and budgets** for stakeholder ministries and strengthens coordination across health, animal husbandry, agriculture, environment, science and other relevant sectors.
- The plan gives greater importance to **laboratory capacity, infection prevention and control, antimicrobial stewardship, research, diagnostics, innovation and private-sector engagement**.
- NCDC currently supports national AMR surveillance through standardised **surveillance protocols, laboratory practices, WHONET-based reporting and antimicrobial consumption surveillance**, strengthening evidence-based policymaking.

One Health Framework:

- AMR crosses the boundaries of **human health, animal health, agriculture, food systems and the environment**, requiring coordinated surveillance and interventions across sectors.
- Antibiotic use in humans and animals, pharmaceutical and agricultural waste, contaminated water and environmental dissemination can contribute to the broader AMR ecosystem.
- NAP-AMR 2.0 therefore adopts a **One Health approach** rather than treating AMR exclusively as a hospital or clinical problem.

Way Forward:

Strengthen Surveillance and Diagnostics:

- India should move beyond isolate-based surveillance towards **integrated surveillance linking laboratory findings with treatment, clinical outcomes, mortality and antimicrobial consumption**.
- Rapid and affordable diagnostics should enable early identification of pathogens and resistance mechanisms, reducing unnecessary empirical antibiotic use.
- Genomic surveillance can further help identify **transmission pathways, emerging resistance mechanisms and high-risk clones**.

Strengthen Infection Prevention:

- Hospitals should institutionalise **hand hygiene, environmental sanitation, device-associated infection prevention, appropriate insertion and early removal of invasive devices, surgical infection prevention and healthcare-associated infection surveillance**.
- Infection prevention should be treated as a core patient-safety function rather than merely an administrative programme.

Improve Antimicrobial Stewardship:

- Stewardship programmes should become a routine part of clinical practice across public and private healthcare facilities.
- Antibiotic policies should be guided by **local resistance patterns, culture and susceptibility results, treatment guidelines and regular prescription audits**.
- Access to effective antibiotics must be balanced with measures that prevent their inappropriate use.

Invest in Innovation and Responsible Access:

- India needs greater investment in **new antibiotics, rapid diagnostics, vaccines, alternative therapeutics and antimicrobial-resistance research**.
- Newer antimicrobials should be protected through stewardship so that their effectiveness is preserved for patients who genuinely require them.
- Public-private partnerships and sustained financing can help address the market and research failures associated with antibiotic development.

Conclusion:

- The ICMR findings demonstrate that **carbapenem resistance is simultaneously a clinical, economic and public-health threat**, particularly in healthcare-associated and severe infections.
- India's AMR challenge cannot be solved by developing a new antibiotic whenever an existing drug becomes ineffective.
- The sustainable response requires an integrated strategy based on **infection prevention, rapid diagnosis, antimicrobial stewardship, surveillance, responsible access to newer drugs and One Health coordination**.
- The success of **NAP-AMR 2.0** will ultimately depend on translating national policy into measurable improvements in hospitals, laboratories, communities, animal health systems and the environment.

Value Addition for UPSC:

Essay and Ethics Linkages:

- AMR can be framed through the principle that **prevention is more sustainable than technological escalation**.
- It also raises questions of **intergenerational equity**, because inappropriate antibiotic use today can reduce the effectiveness of essential medicines available to future generations.

Mains Enrichment:

- **Keywords:** Antimicrobial Resistance, Carbapenem Resistance, Gram-Negative Bacteria, Antimicrobial Stewardship, Infection Prevention and Control, Healthcare-Associated Infections, Diagnostic Stewardship, One Health, Genomic Surveillance, NAP-AMR 2.0.
- **Core argument:** “AMR is not merely an antibiotic problem; it is a systems problem involving diagnosis, infection prevention, prescribing behaviour, healthcare transmission, surveillance and the One Health interface.”
- **Policy anchor:** NAP-AMR 2.0 (2025–2029) provides India with a framework to convert this systems-level understanding into coordinated national action.

China's Yarlung Zangbo Mega-Dam Raises Strategic, Ecological and Water-Security Concerns for India and Bangladesh

Recent Developments:

- A devastating **glacial collapse and flash flooding near the Nepal–China border** has renewed attention to the vulnerability of the Himalayan region to cascading hazards and raised fresh concerns regarding China's mega hydropower project on the **Yarlung Zangbo**, particularly for downstream countries such as India and Bangladesh.
- China is proceeding with a mega hydropower project near the **Great Bend of the Yarlung Zangbo** in southeastern Tibet, where the river makes a dramatic turn before flowing towards India. The project is expected to have an installed capacity of around **60 GW** and annual electricity generation of about **300 billion kWh**, making it one of the largest hydropower projects in the world.
- The project has gained additional significance after geological studies raised concerns about **active faults, earthquakes and landslides** in the project region, highlighting the difficulty of constructing very large infrastructure in the seismically active Himalayas.
- The project has also revived India's long-standing concerns regarding **hydrological data sharing, downstream ecological impacts, disaster preparedness and the absence of a comprehensive water-sharing treaty** with China.

Understanding the Yarlung Zangbo–Brahmaputra System:

River Course and Geography:

- The **Yarlung Zangbo** originates in the Tibetan Plateau and flows eastward through Tibet before making a sharp turn around the **Great Bend near Namcha Barwa**, after which it enters Arunachal Pradesh as the **Siang**.
- In Assam, the Siang combines with major tributaries such as the **Dibang and Lohit** and forms the **Brahmaputra**, which subsequently enters Bangladesh before reaching the Bay of Bengal.
- The river is therefore a **transboundary river system**, making its upstream management in China directly relevant to India and Bangladesh.
- The wider Brahmaputra basin extends across **China, India, Bangladesh and Bhutan**, creating shared interests in water security, agriculture, ecology, disaster management and hydropower.

Strategic Importance of the Great Bend:

- The Great Bend contains an exceptionally steep elevation gradient and deep gorges, creating enormous **hydropower potential**.
- The project seeks to exploit this geographical advantage through a large-scale hydropower system, reportedly involving multiple cascade power stations.
- The exact configuration of reservoirs, diversion structures and powerhouses has received limited independent verification, making **transparency and technical information sharing** particularly important.

Scale and Engineering Significance:

Mega Hydropower Project:

- The proposed project is estimated to have around **60 GW of installed capacity** and approximately **300 billion kWh of annual electricity generation**, substantially exceeding the annual generation associated with the Three Gorges project.
- The project is being developed in extremely difficult Himalayan terrain, where steep slopes, deep gorges, seismic activity and fragile geological conditions create major engineering challenges.
- China has described the development primarily as a major **hydropower and clean-energy project**, while downstream countries are concerned about its implications for river flows, sediment movement, ecosystems and disaster risks.
- Although the project has been described in some accounts as **run-of-the-river**, reports indicate associated reservoir and diversion infrastructure, making independent assessment of its actual hydrological effects essential.

Major Concerns for India and Downstream Countries:

Ecological and Environmental Concerns:

- The **Yarlung Zangbo Grand Canyon** is an ecologically sensitive Himalayan landscape with high biodiversity and complex mountain ecosystems.
- Large-scale infrastructure can alter **river flow, sediment transport, aquatic habitats and downstream ecological processes**, although the magnitude of these effects depends on the final project design and operating regime.

- Research on existing dams in the Yarlung Zangbo basin indicates that dams can modify **flow and sediment regimes**, demonstrating the need for cumulative-impact assessment rather than project-by-project evaluation.

Seismic and Geological Risks:

- The project lies in a **highly earthquake-prone Himalayan region**, where earthquakes, landslides and slope instability can pose risks to large infrastructure.
- Recent geological reporting has highlighted an **active fault zone** in the broader project area, reinforcing concerns regarding structural safety and construction in unstable terrain.
- The 2025 Tibet earthquake also demonstrated the broader vulnerability of Himalayan infrastructure to major seismic events.
- Climate change can further interact with geological hazards through **glacial retreat, extreme precipitation, glacial lake outburst floods and landslides**, creating cascading disaster risks.

Water-Security and Flow Regulation:

- As the **upper riparian state**, China possesses considerable geographical control over the upper reaches of the Yarlung Zangbo.
- A large hydropower system could potentially influence the **timing, seasonal pattern and sediment characteristics of downstream flows**, although this does not mean that China can completely control the Brahmaputra's total water availability in India.
- The Brahmaputra receives substantial additional flows from tributaries within India, particularly in Arunachal Pradesh and Assam, which reduces the extent to which an upstream project can determine the river's entire downstream discharge.
- Nevertheless, changes in **dry-season flows, sudden releases, sediment transport and flood timing** could have implications for downstream communities and ecosystems.

Geopolitical and Strategic Concerns:

- The project is located close to a **sensitive and disputed border region**, giving the infrastructure strategic significance beyond electricity generation.
- India's dependence on upstream hydrological information creates a degree of **information asymmetry**, particularly during floods and extreme weather events.
- The absence of a comprehensive **India–China transboundary river water-sharing treaty** remains a major institutional limitation.
- Water infrastructure on the upper reaches of a transboundary river can therefore become a component of broader **hydro-politics and regional strategic competition**.

India–China Cooperation on Transboundary Rivers:

Expert Level Mechanism:

- India and China established an **Expert Level Mechanism on Trans-border Rivers in 2006** to discuss hydrological information, emergency management and other transboundary river issues.
- The mechanism provides an institutional channel for discussing river-related concerns, but it is **not equivalent to a legally binding water-sharing treaty**.

Hydrological Data Sharing:

- India and China have arrangements for sharing **flood-season hydrological information** on the Brahmaputra and Sutlej.
- The broader cooperation framework has included arrangements covering hydrological data, emergency management and transboundary river concerns.
- India has repeatedly emphasised that timely hydrological information is important for **flood forecasting, disaster preparedness and mitigation**.
- Historical Government of India statements have also stressed that downstream interests should not be adversely affected by upstream activities.

Implications for India:

Economic and Social Dimensions:

- The Brahmaputra system supports **agriculture, fisheries, inland navigation, hydropower, wetlands and livelihoods** across northeastern India.
- Changes in river behaviour can therefore affect food security, local economies, infrastructure and the livelihoods of vulnerable communities.
- The issue is particularly significant for **Arunachal Pradesh and Assam**, where communities and ecosystems are closely connected with the river system.

Strategic Preparedness:

- India needs to treat the Brahmaputra not merely as a water resource but as a **strategic, ecological and disaster-management asset**.
- Greater hydrological monitoring, satellite observation and river-flow modelling can improve India's ability to anticipate changes in downstream conditions.
- Strengthening domestic hydropower and multipurpose projects may provide strategic resilience, but such projects must themselves satisfy rigorous **environmental and seismic safety standards**.

Way Forward for India:

Strengthen Bilateral Cooperation:

- India should pursue **real-time hydrological data sharing, joint disaster-warning mechanisms, regular expert-level consultations and transparent communication** on major upstream infrastructure.
- Existing institutional mechanisms should be strengthened rather than allowing transboundary water issues to become exclusively geopolitical disputes.

Demand Greater Transparency:

- India should seek access to **technical designs, environmental impact assessments, seismic studies, dam-safety assessments and operating protocols** relevant to the project.
- Independent scientific assessment and transparent exchange of information are essential because the project is located in an environmentally and geologically sensitive region.

Strengthen Regional and Domestic Capacity:

- India should cooperate with **Bangladesh and Bhutan** on downstream hydrology, disaster preparedness, ecological monitoring and climate-resilient river management.
- India should strengthen **early-warning systems, floodplain management, satellite monitoring, hydrological stations and community-based disaster preparedness.**
- Basin-level planning should integrate **water security, biodiversity conservation, disaster risk reduction, hydropower development and climate adaptation.**

Conclusion:

- China's Yarlung Zangbo mega-dam represents the intersection of **hydropower development, Himalayan ecology, disaster vulnerability, transboundary water governance and India–China geopolitics.**
- India's response should avoid both complacency and exaggerated assumptions about China's ability to completely control the Brahmaputra.
- The immediate priority should be **transparency, reliable hydrological data, scientific assessment, disaster preparedness and institutionalised transboundary cooperation.**
- A cooperative approach based on **equitable and reasonable utilisation, environmental sustainability, prior information sharing and downstream disaster protection** offers a more durable framework for managing the Brahmaputra basin.

Value Addition for UPSC:***Mains Enrichment:***

- **Keywords:** Transboundary Rivers, Water Security, Hydro-politics, Upper Riparian, Lower Riparian, Yarlung Zangbo, Siang, Brahmaputra, Great Bend, Glacial Lake Outburst Flood, Environmental Impact Assessment, Hydrological Data Sharing, Disaster Risk Reduction, One Basin Approach.
- **Core argument:** *“Transboundary river management in the Himalayas requires a shift from unilateral infrastructure development towards transparency, scientific cooperation, ecological sustainability and shared disaster-risk management.”*
- **Institutional anchor:** The **2006 Expert Level Mechanism on Trans-border Rivers** provides an existing platform for India–China dialogue, but stronger and more predictable arrangements for data sharing and downstream protection remain necessary.

Regional Rural Banks Consolidation Raises Questions over Local Banking and Last-Mile Rural Credit Delivery**Recent Developments:**

- Former **RBI Governor C. Rangarajan** has criticised the continuing consolidation of Regional Rural Banks as **“a step in the wrong direction”**, arguing that excessive consolidation could weaken their distinctive local character and eventually facilitate their absorption into universal banks.
- His remarks have renewed the debate over whether the consolidation of RRBs can simultaneously deliver **economies of scale** and preserve the institution's original developmental purpose of providing locally responsive credit to rural and vulnerable communities.

- Under the latest “**One State-One RRB**” phase, 26 RRBs across 11 States/Union Territories were amalgamated with effect from **1 May 2025**, reducing the total number of RRBs from 43 to 28. The Government has stated that the reform seeks to retain RRBs’ proximity to rural communities while improving scale efficiency and reducing costs.

Regional Rural Banks: Concept and Evolution:

Origin and Legal Framework:

- **Regional Rural Banks (RRBs)** are scheduled commercial banks created to expand institutional credit in rural areas, particularly for **small and marginal farmers, agricultural labourers, rural artisans and other priority-sector borrowers**.
- The first RRBs were established in **1975** following the recommendations of the **Narasimham Working Group**, while the **Regional Rural Banks Act, 1976** subsequently provided the statutory framework for their functioning.
- RRBs were conceived as a supplementary channel to the **cooperative credit structure** and were intended to combine the local orientation of cooperatives with the managerial capabilities of commercial banks.

Ownership and Institutional Structure:

- RRBs follow a distinctive three-way ownership model in which the **Central Government holds 50%**, the **Sponsor Bank holds 35%**, and the **State Government holds 15%** of the share capital.
- Each RRB is sponsored by a **public sector commercial bank**, which provides managerial, financial and institutional support, while the RRB operates within its designated geographical area.
- The **RBI regulates** RRBs as banking institutions, while **NABARD** plays an important role in their supervision, inspection, capacity building and development.

Core Objective:

- The fundamental rationale behind RRBs was that a **local and regionally focused banking institution** would understand rural borrowers, agricultural cycles, local economic conditions and community-level credit requirements better than large, geographically dispersed banks.
- Their developmental mandate therefore goes beyond profitability and includes **financial inclusion, priority-sector lending, rural savings mobilisation and credit access for weaker sections**.
- RRBs form part of India’s broader institutional architecture for inclusive finance, alongside **cooperative banks, Self-Help Groups, microfinance institutions, Local Area Banks and Small Finance Banks**.

Why Were RRBs Consolidated?

Evolution of the Consolidation Process:

- The Government began consolidating RRBs from **2005** to address concerns relating to their small operational scale, financial viability, overlapping geographical areas and limited capacity to adopt modern banking technology.
- During the first major consolidation phase between **2005 and 2010**, the number of RRBs declined from 196 to 82, followed by further rounds of amalgamation.
- The latest phase reduced the number from **43 to 28 RRBs**, with the new structure becoming effective on **1 May 2025**. The Department of Financial Services currently lists 28 functioning RRBs.

Government's Rationale:

- Consolidation is intended to create financially stronger institutions capable of achieving **economies of scale, technological modernisation, better risk management and cost rationalisation**.
- Larger RRBs can potentially strengthen their capital base, diversify products, invest in digital banking infrastructure and improve operational efficiency while continuing to serve rural areas.
- The Government has specifically emphasised that the **"One State-One RRB"** approach is intended to combine scale efficiency with continued closeness to rural communities.

Rangarajan's Concerns over Consolidation:***Loss of Local Character:***

- Rangarajan's central concern is that RRBs were created precisely because their **local character** was expected to improve the distribution of institutional credit, whereas large state-level entities may gradually become less responsive to highly localised credit requirements.
- When decision-making becomes increasingly centralised, there is a risk that **local knowledge, relationship-based lending and understanding of informal rural economic activity** may weaken.

Risk of Mission Drift:

- RRBs were established primarily as **development-oriented institutions**, rather than simply as commercially optimal banks.
- Excessive emphasis on profitability and scale could therefore create a **mission-versus-commercial-viability dilemma**, particularly if lending to small borrowers is perceived as costly or risky.

Possibility of Eventual Absorption:

- Rangarajan has warned that consolidation could eventually create a pathway for RRBs to be absorbed into **universal banks**, potentially eliminating the institutional model that was specifically created for rural credit delivery.

Evidence on RRB Performance:***Improving Financial Viability:***

- The case for consolidation should also be assessed against recent improvements in RRB performance rather than assuming that all RRBs remain financially weak.
- NABARD data show that between March 2023 and March 2024, the number of RRBs reporting profits increased from **37 to 40**, while the number reporting losses declined from 6 to 3.
- During the same period, **net profit increased from ₹4,974 crore to ₹7,571 crore**, CRAR improved from 13.4% to 14.2%, and GNPA declined from 7.3% to 6.1%.

Strong Priority-Sector Role:

- RRBs continue to play an important role in directed rural credit, with NABARD reporting that RRBs achieved **88.6% priority-sector lending** against a 75% overall target in FY2024.
- Their lending to **small and marginal farmers reached 19%**, compared with a prescribed target of 10%, while lending to weaker sections reached 84.8% against the applicable target.

- These figures indicate that RRBs retain substantial relevance as instruments of **financial inclusion and priority-sector credit delivery**, even as their institutional structure changes.

Arguments in Favour of Consolidation:

Economies of Scale:

- Larger RRBs can spread the fixed costs of **digital infrastructure, cybersecurity, compliance, human-resource management and technological upgrades** across a wider customer base.

Stronger Financial Capacity:

- Consolidated entities may possess greater capacity to absorb shocks, maintain adequate capital and diversify their loan portfolios.

Better Technology and Products:

- Larger institutions can invest more effectively in **digital banking, mobile services, data analytics, financial literacy and modern risk-management systems**, potentially improving rural customer access.

Reduced Administrative Duplication:

- Amalgamation can reduce duplication in management, branches, technology platforms and compliance functions, allowing resources to be redirected towards productive banking activities.

Arguments Against Excessive Consolidation:

Erosion of Local Knowledge:

- A very large geographical footprint may weaken the **relationship between bankers and local communities**, especially where agricultural lending depends on local knowledge.

Reduced Regional Responsiveness:

- A single RRB covering an entire State may face difficulties in responding equally effectively to diverse **agro-climatic conditions, local occupations and regional credit needs**.

Risk to Last-Mile Credit:

- If consolidation is accompanied by branch rationalisation or excessive centralisation, the availability of affordable institutional credit for **small farmers, landless workers and rural micro-enterprises** could be affected.

Developmental Mandate versus Commercial Logic:

- The success of RRBs should not be evaluated only through profitability because their wider objectives include **financial inclusion, priority-sector lending and reduction of dependence on informal credit**.

Small Finance Banks and the Rural Credit Gap:

Need for More Inclusive Banking Institutions:

- Rangarajan has also argued that India needs greater encouragement for the establishment of **Small Finance Banks (SFBs)** because the existing number remains limited relative to the country's unmet credit requirements. Recent RBI listings identify **11 SFBs**.
- SFBs are designed to promote financial inclusion by primarily serving **small business units, small and marginal farmers, micro and small industries and other underserved borrowers**.

Structural Challenge:

- Rangarajan has argued that prospective promoters may have limited incentives to establish additional SFBs when they must comply with substantial regulatory requirements similar to other banking institutions.
- At the same time, the RBI permits eligible SFBs to **voluntarily transition into universal banks** subject to conditions including a satisfactory track record as an SFB for at least five years and fulfilment of prescribed capital and regulatory requirements.

Broader Significance for Rural Financial Inclusion:

Persistent Rural Credit Gap:

- Despite decades of institutional development, many **small farmers, landless workers, rural artisans and micro-enterprises** continue to face difficulties in obtaining timely and affordable formal credit.
- Inadequate access to formal finance can increase dependence on **informal lenders**, potentially resulting in higher borrowing costs and debt vulnerability.

Institutional Balance:

- India therefore needs an institutional structure that combines **financial viability with developmental responsiveness** rather than treating the two objectives as mutually exclusive.
- RRBs, cooperative banks, SHGs, microfinance institutions and SFBs can complement one another if each institution retains a clearly defined role within the broader financial-inclusion ecosystem.

Way Forward:

Preserve Local Character with Scale:

- Consolidation should be accompanied by mechanisms that preserve **local credit assessment, decentralised decision-making and community-level engagement**.
- Regional offices, local credit committees and specialised agricultural banking units can help larger RRBs retain their grassroots orientation.

Strengthen Viability without Mission Drift:

- RRB reforms should focus on **technology, governance, capital adequacy, risk management and human-resource capacity** while protecting lending to priority and vulnerable groups.

Expand Last-Mile Financial Access:

- India should strengthen the complementary role of **SFBs, cooperative institutions, SHGs and digital financial services** rather than relying on consolidation alone to solve rural credit constraints.

Measure Developmental Outcomes:

- Evaluation of RRBs should include not only profitability and asset quality but also **financial inclusion, credit access, agricultural lending, women's access to finance and outreach to underserved regions**.

Conclusion:

- The debate over RRB consolidation is ultimately a question of **institutional design**: whether scale and efficiency can be achieved without sacrificing the local orientation that justified the creation of RRBs.
- Recent improvements in profitability, capital adequacy, asset quality and priority-sector lending demonstrate that RRBs can become financially stronger while continuing to perform their developmental role.
- The optimal approach is therefore neither unconditional consolidation nor preservation of every existing institution, but **efficient, technologically capable and financially sustainable RRBs that remain locally responsive and committed to last-mile credit delivery**.

Value Addition for UPSC:***Key Concepts:***

- **RRB model**: Local orientation + commercial banking expertise + developmental mandate.
- **One State-One RRB**: Consolidation model aimed at combining **scale efficiency with rural outreach**.
- **Core dilemma**: Economies of scale versus local responsiveness.
- **Policy principle**: Financial institutions created for inclusion should be evaluated through both **financial sustainability and developmental outcomes**.

Mains Enrichment:

- “Scale should strengthen the last mile, not replace it.” The RRB debate illustrates the broader challenge of balancing efficiency-oriented institutional reforms with India's objective of inclusive and equitable credit delivery.

**India's Jute Sector: Golden Fibre, Sustainable Growth and Diversification
Challenges in the Rural Economy****Recent Developments:**

- India remains the **world's largest producer of raw jute** and the leading producer of jute goods, accounting for about **75% of estimated global jute-goods production** as of July 2026. In FY 2025-26, India produced **76 lakh bales of raw jute** and **12.80 lakh MT of jute goods**, while exporting 1.71 lakh MT of jute goods worth ₹3,155.27 crore.

- The Third Advance Estimate for 2025-26 places combined **jute and mesta production at 94.03 lakh bales**, compared with 88.02 lakh bales in 2024-25, indicating an increase in overall production.
- The Union Government fixed the **MSP for raw jute at ₹5,925 per quintal for 2026-27**, providing a return of 61.8% over the all-India weighted average cost of production and increasing the MSP by ₹275 over 2025-26.
- The Government has increasingly focused on **diversification, digital procurement, mechanisation, technical textiles and sustainable applications** to reduce the sector's dependence on traditional packaging and strengthen farmer incomes.

About Jute: The Golden Fibre:

Key Characteristics:

- Jute is a **biodegradable, recyclable and renewable natural fibre** characterised by rapid growth, relatively low production costs and wide availability, making it an important sustainable alternative to several synthetic materials.
- It is **strong, durable, breathable and versatile**, with applications in packaging, construction, agriculture, geotextiles, industrial textiles, apparel and lifestyle products.
- Jute also provides useful functional properties such as **thermal and acoustic insulation, high moisture absorption and low static generation**, which increase its suitability for diversified industrial applications.

Agro-Climatic Requirements:

- Jute is generally sown during **March-April** and harvested within approximately 100-110 days, requiring **hot and humid conditions with 700-1,500 mm rainfall**.
- The crop is predominantly **rainfed and cultivated largely by small and marginal farmers**, making productivity and income particularly sensitive to monsoon variability, input access and market conditions.

Historical Evolution of the Jute Industry:

From Traditional Fibre to Commercial Commodity:

- Jute has been used in the Indian subcontinent since ancient times, with evidence of its use dating back to the **3rd century BC**, while its large-scale commercialisation expanded during British rule with the establishment of jute mills in Bengal.
- The **Partition of 1947** created a major structural disruption because nearly 80% of jute-growing areas went to East Pakistan, whereas most processing mills remained in India, producing a severe shortage of domestic raw material.
- The **Grow More Jute campaign of September 1949** helped increase raw-jute production from 6.7 lakh tonnes in 1951-52 to 14.56 lakh tonnes in 1961-62.
- The **Jute Packaging Materials Act, 1987** subsequently created a stable institutional market by mandating the use of jute packaging for specified essential commodities.

Present Status and Economic Significance:

Production and Market Position:

- India has retained global leadership in both raw-jute production and jute-goods manufacturing, with **West Bengal serving as the principal production and industrial hub**.

- In FY 2025-26, domestic consumption of jute goods stood at **12.05 lakh MT**, accounting for nearly 94% of total jute-goods production, while exports provided an additional international market.
- The sector supports **farmers, mill workers, transporters, traders, artisans and rural enterprises**, making it important for employment, regional development and inclusive growth.

Rural Livelihoods:

- Since jute is predominantly cultivated by **small and marginal farmers**, stable procurement and remunerative prices can directly influence rural household incomes.
- The sector also has potential for **women-led enterprises, handicrafts, micro and small enterprises and rural value addition**, particularly through diversified jute products.

Sustainable and Diversified Applications:

Jute Geotextiles:

- **Jute Geotextiles** are technical textiles used for **soil stabilisation, erosion control, road construction, river-bank protection and ecological restoration**.
- Their biodegradable nature allows them to support soil structure, moisture retention and seed germination while gradually decomposing into the soil, making them suitable for environmentally sensitive infrastructure.

Food, Healthcare and Lifestyle Applications:

- Jute leaves are consumed in parts of **Africa, the Middle East, Southeast Asia and Japan** and contain vitamins, carotenoids, calcium, potassium and dietary fibre.
- Technologies have also been developed for **antioxidant herbal drinks and healthcare products**, demonstrating the potential for value addition beyond fibre extraction.
- Jute can be blended with **natural and synthetic fibres** to develop apparel, furnishings, packaging and other higher-value products.

Major Challenges:

Declining Acreage and Productivity:

- Farmers may shift towards relatively higher-return crops such as **maize and paddy**, contributing to fluctuations in jute acreage; the area under jute declined to about 5.56 lakh hectares in 2025 against a normal area of around 6.60 lakh hectares.
- Low and uneven productivity, combined with inadequate mechanisation, limits the competitiveness of Indian jute against alternative fibres.

Fibre Quality and Retting:

- A large proportion of Indian jute belongs to lower grades such as **TD-3 to TD-5**, which are mainly suitable for conventional sacking rather than premium diversified products.
- **Retting**, the process of separating fibre from the plant stem, requires adequate quantities of clean water, and water scarcity can reduce both fibre quality and processing efficiency.

Climate Vulnerability:

- Erratic monsoons, floods in regions such as Assam and drought-like conditions can affect both **yield and fibre quality**, while climate change may increase the frequency and intensity of such production risks.

Dependence on Government Procurement:

- A substantial share of jute production continues to depend on government-mandated packaging, particularly for **foodgrains and sugar**, creating a stable market but also exposing the industry to policy and procurement-related risks.
- Excessive dependence on compulsory packaging can discourage innovation if mills remain focused primarily on conventional sacks instead of developing higher-value products.

Technology and Supply-Chain Gaps:

- The sector requires greater **mechanisation, digitalisation, quality testing, modern processing facilities and integrated supply chains** involving farmers, traders, transporters, mills and exporters.
- Expanding technical applications such as jute geotextiles also requires standardised specifications, testing facilities, technical awareness and skilled installation capacity.

Government Interventions:***Minimum Support Price and Procurement:***

- The **MSP for raw jute is ₹5,925 per quintal for 2026-27**, representing a 61.8% return over the all-India weighted average cost of production. The MSP has increased from ₹2,400 per quintal in 2014-15 to ₹5,925 in 2026-27.
- The **Jute Corporation of India** remains the Central Government's nodal agency for price-support operations, with procurement losses, if any, reimbursed by the Government.

Jute Packaging Policy:

- The **Jute Packaging Materials Act, 1987** mandates packaging of **100% of foodgrains and 20% of sugar** in jute bags, thereby creating assured demand for the industry.
- However, long-term sustainability requires diversification because excessive dependence on mandatory packaging can expose producers and mills to changes in procurement policy and demand.

National Jute Development Programme:

- The **National Jute Development Programme** promotes productivity enhancement, farmer income growth, mechanisation and product diversification through initiatives such as **JUTE-ICARE and the Jute Diversification Scheme**.
- **JUTE-ICARE**, launched in FY 2015-16, promotes scientific cultivation, certified seeds, mechanisation, field demonstrations and improved retting practices, including convergence with irrigation and rural development programmes.

Digitalisation and Market Development:

- **JUTE-SMART** digitises the procurement and supply of foodgrain jute bags, improving transparency, traceability and efficiency in government procurement.

- The **Jute Mark India** initiative promotes authenticity, quality, sustainability and standardisation of jute products, while fairs and promotional activities help expand domestic and export markets.
- The **Jute Crop Information System**, using remote sensing and field data, supports near-real-time monitoring and assessment of jute cultivation, strengthening data-driven agricultural planning.

Way Forward:

From Packaging Dependence to a Green Value Chain:

- India should accelerate the transition from conventional sacks towards **jute geotextiles, technical textiles, sustainable apparel, blended fabrics, lifestyle products, healthcare applications and premium packaging**.

Improve Productivity and Fibre Quality:

- Greater investment in **improved seeds, mechanisation, scientific retting, irrigation support and farmer extension services** is necessary to raise productivity and enable Indian jute to compete in higher-value markets.

Strengthen Global Competitiveness:

- India should combine **branding, quality certification, digital supply chains, export promotion and product innovation** to convert its raw-material advantage into a globally competitive value chain.

Build Climate Resilience:

- Climate-resilient varieties, efficient water management, improved retting infrastructure, crop diversification and weather-based advisories can reduce production risks faced by smallholders.

Conclusion:

- Jute is no longer merely a traditional packaging fibre; its **biodegradability, recyclability, strength and versatility** position it as a strategic resource for India's transition towards sustainable production and reduced dependence on plastics.
- The sector's future depends on balancing **farmer incomes, industrial competitiveness, environmental sustainability and technological modernisation**.
- India can transform the Golden Fibre into a **green, inclusive and globally competitive value chain** by combining MSP support and assured procurement with technical innovation, diversified products, digital agriculture and export-oriented manufacturing.

Value Addition for UPSC:

Key Concepts:

- **Golden Fibre:** Jute, owing to its characteristic golden colour and natural lustre.
- **Retting:** Microbial process used to separate jute fibre from the plant stem.
- **Jute Geotextile:** Biodegradable technical textile used for soil stabilisation, erosion control and ecological restoration.
- **Core Policy Challenge:** Moving from **packaging dependence to diversified value addition**.

Mains Enrichment:

- “Jute can convert India’s natural-fibre advantage into a circular-economy opportunity.”
- The sector demonstrates how **agricultural livelihoods, sustainable materials, technical textiles and green industrialisation** can be integrated into a single value chain.

Swachh Vayu Diwas 2026 and National Clean Air Programme: India’s Evolving Approach to Urban Air Pollution

Recent Developments:

- The **Ministry of Environment, Forest and Climate Change (MoEFCC)** organised **Swachh Vayu Diwas 2026** on **7 September 2026**, coinciding with the **International Day of Clean Air for Blue Skies**, designated by the United Nations General Assembly through Resolution 74/212 in 2019. The 2026 global theme was “**Clean Air for Climate Action**”, highlighting the close linkages between air pollution mitigation and climate action.
- The event witnessed the conferment of the **5th Swachh Vayu Sarvekshan Awards** on the best-performing cities and wards under the **National Clean Air Programme (NCAP)**. A **Compendium of Best Management Practices under NCAP** was also released to facilitate replication of successful air-quality interventions across States and cities.
- In the 2026 assessment, **Lucknow** ranked first among cities with populations above 10 lakh, followed by **Indore** and **Jabalpur**, while **Rourkela** topped the 3-10 lakh category and **Kalinganagar** topped the below-3 lakh category. The assessment also expanded to the ward level, covering more than **7,400 wards**, thereby strengthening the bottom-up approach to urban air-quality management.
- NCAP performance data for **2025-26** indicates that **108 of 130 cities** recorded improvement in annual PM10 concentrations compared with the 2017-18 baseline, while **72 cities achieved reductions above 20% and 26 cities achieved reductions above 40%**. Further, **14 cities met the National Ambient Air Quality Standards**, compared with 6 cities in 2017-18.

Understanding Swachh Vayu Sarvekshan:***Framework and Assessment:***

- **Swachh Vayu Sarvekshan** was introduced in **2022-23** as an annual performance assessment of the 130 NCAP cities, with the objective of promoting healthy competition, innovation and faster implementation of city-specific clean-air measures.
- The framework evaluates interventions addressing major urban pollution sources, including **road dust, solid waste management, vehicular emissions, industrial emissions, construction and demolition waste, commercial emissions such as diesel generator sets, and information, education and communication activities**.
- The assessment combines **self-assessment by cities, State-level scrutiny, evaluation by the Central Pollution Control Board, independent field verification and final selection of the best-performing cities**, thereby attempting to strengthen both performance measurement and accountability.

City and Ward Categorisation:

- NCAP cities are assessed in three population-based categories: **above 10 lakh population, 3-10 lakh population, and below 3 lakh population**, allowing cities with different demographic and infrastructural conditions to be compared within broadly similar groups.
- The 2026 assessment introduced a **ward-level dimension**, with national awards for wards having populations above 30,000, between 10,000 and 30,000, and below 10,000. This approach shifts attention from city-wide averages towards pollution sources and administrative action at the neighbourhood level.

Key Highlights of Swachh Vayu Sarvekshan 2026:

Top-Performing Cities:

- **Category 1, population above 10 lakh:** Lucknow secured the first position for measures such as introducing electric vehicles into municipal fleets, mechanised road sweeping and remediation of legacy waste, followed by Indore and Jabalpur.
- **Category 2, population between 3 and 10 lakh:** Rourkela, Odisha, emerged as the top-performing city, while **Category 3, population below 3 lakh**, was topped by Kalinganagar, Odisha.

Ward-Level Assessment:

- The ward-level assessment recognised **Ward 70 of Lucknow** in Category 1, **Wards 30 and 36 of Bhubaneswar** in Category 2, and **Ward 13 of Rourkela** in Category 3 at the national level. In addition, **69 wards from 23 States and Union Territories** received awards under the broader ward-level assessment.

Progress under NCAP:

- During **2025-26**, 108 cities showed improvement in annual **PM10** concentrations compared with 2017-18, 72 cities achieved reductions exceeding 20%, and 26 cities achieved reductions exceeding 40%; **14 cities complied with the National Ambient Air Quality Standards**.
- Additional data indicates that during **2025**, 73 cities recorded reductions in annual **PM2.5** concentrations compared with 2024, including 17 cities that achieved reductions of more than 20%, suggesting that improvements are gradually extending beyond PM10 to finer particulate pollution.

Best-Practice Compendium:

- The **Compendium of Best Management Practices under NCAP** consolidates successful interventions in road-dust control, vehicular and industrial pollution management, solid-waste management, and construction and demolition waste management, thereby providing a practical reference for States, Urban Local Bodies and pollution-control agencies.

National Clean Air Programme:

Objectives and Coverage:

- The **National Clean Air Programme** was launched by the Ministry of Environment, Forest and Climate Change in **January 2019** as a long-term, time-bound and collaborative national strategy for improving ambient air quality.
- NCAP covers **130 cities across 24 States and Union Territories**, including non-attainment cities and Million Plus cities, through national-, State- and city-level clean-air action plans.

- The programme initially targeted a **20-30% reduction in PM10 concentrations by 2024-25** compared with the 2017-18 baseline. The target was subsequently revised to achieving **up to 40% reduction in PM10 concentrations or compliance with the national standard of 60 micrograms per cubic metre by 2025-26**.

Major Pollution Sources:

- NCAP follows a **source-specific and sectoral approach**, targeting road and soil dust, vehicular emissions, industrial pollution, construction activities, open waste burning, domestic fuel use and other locally significant sources.
- This approach is important because urban air pollution is **spatially heterogeneous**, meaning that the dominant pollution source can vary significantly between cities and even between different neighbourhoods within the same city.

Institutional and Financial Framework:

- NCAP is implemented through **City Clean Air Action Plans**, State-level frameworks and convergence with existing government programmes, including the **Swachh Bharat Mission, AMRUT, Smart Cities Mission, Nagar Van Yojana and other sectoral schemes**.
- A performance-linked grant of **₹16,425 crore** has been provided to the 130 NCAP cities as critical-gap funding for implementing air-pollution mitigation measures.
- The programme operates through coordination among the **Ministry, Central Pollution Control Board, State Pollution Control Boards, Urban Local Bodies and other stakeholders**, reflecting the multi-sectoral nature of air pollution.

Digital Monitoring and Scientific Assessment:

- The **PRANA portal**, or Portal for Regulation of Air-pollution in Non-Attainment cities, tracks the physical and financial progress of city-specific clean-air action plans and strengthens evidence-based monitoring.
- **Source Apportionment Studies and Emission Inventories** are increasingly important because they identify the relative contribution of different pollution sources, enabling cities to shift from generic pollution-control measures towards targeted interventions.
- The use of **real-time monitoring, satellite observations, emission inventories and data-driven city action plans** can improve the precision of urban air-quality governance, particularly when pollution sources vary seasonally.

Significance and Major Challenges:

Significance:

- NCAP represents a shift from fragmented pollution-control measures towards a **national, city-specific and performance-oriented framework**, while Swachh Vayu Sarvekshan adds an element of competitive benchmarking.
- The ward-level assessment is significant because **city-wide averages can conceal local pollution hotspots**. Neighbourhood-level monitoring can therefore improve accountability and make interventions more responsive to local conditions.
- Clean-air measures can generate **co-benefits for climate mitigation, public health, energy efficiency, urban mobility and waste management**, because several major sources of particulate pollution also contribute to greenhouse-gas emissions.

Major Challenges:

- Despite measurable progress, the national target remains unevenly achieved because only **26 of 130 cities recorded reductions exceeding 40% in PM10**, indicating that improvements have not yet translated into uniform compliance across the NCAP network.
- **Vehicular growth, construction activity, road dust, industrial emissions, waste burning and seasonal biomass burning** continue to exert pressure on urban air quality, while meteorological conditions can aggravate pollution through temperature inversions, low wind speeds and atmospheric stagnation.
- NCAP does not itself constitute a comprehensive statutory pollution-control law with uniform penal consequences for failure to meet programme targets. Its effectiveness therefore depends heavily on **inter-agency coordination, regulatory enforcement, municipal capacity and political commitment**.
- Many Urban Local Bodies face constraints in terms of **technical expertise, trained personnel, monitoring infrastructure, financial capacity and implementation capability**, particularly in smaller cities.

Way Forward:

From Target-Based to Source-Based Air Quality Management:

- Cities should move beyond measuring only ambient concentrations and focus more strongly on **identifying, quantifying and controlling major emission sources**, supported by updated source-apportionment studies and emission inventories.

Strengthening Urban Governance:

- Urban Local Bodies require greater **technical capacity, dedicated clean-air cells, trained personnel, reliable monitoring networks and predictable funding** to implement and evaluate city-specific interventions.
- Ward-level assessment should be institutionalised through **local pollution hotspot mapping, citizen reporting, decentralised waste management and neighbourhood-level performance indicators**, thereby making clean-air governance more participatory.

Integrating Clean Air with Climate Action:

- Since many air pollutants and greenhouse gases originate from common sources, India should adopt an integrated strategy combining **clean energy, electric mobility, public transport, energy efficiency, waste management and industrial decarbonisation**.
- The 2026 theme, **“Clean Air for Climate Action,”** reinforces the need to treat air pollution and climate change as interconnected policy challenges rather than isolated environmental issues.

Strengthening Regional Cooperation:

- Air pollution frequently crosses administrative and national boundaries; therefore, **inter-State coordination, airshed-based planning and regional emission management** are essential, particularly for highly polluted urban and industrial clusters.

Conclusion:

- India's clean-air strategy is gradually evolving from a broad national programme towards a **data-driven, source-specific, performance-linked and decentralised framework**.

- The progress recorded under NCAP demonstrates that targeted interventions can improve air quality, but the uneven performance across cities shows that **implementation capacity, enforcement, scientific assessment and local accountability** remain critical.
- The combination of **NCAP, Swachh Vayu Sarvekshan, PRANA, source-apportionment studies and ward-level assessment** can provide a stronger institutional architecture for achieving cleaner air, provided that environmental governance is integrated with urban planning, climate policy and public participation.

Value Addition for UPSC:

Key Concepts:

- **PM10:** Particulate matter with an aerodynamic diameter of 10 micrometres or less, capable of entering the respiratory system.
- **PM2.5:** Fine particulate matter with an aerodynamic diameter of 2.5 micrometres or less, which can penetrate deeper into the lungs and enter the bloodstream.
- **Source Apportionment:** Scientific assessment of the relative contribution of different pollution sources to ambient pollutant concentrations.
- **Non-Attainment City:** A city that fails to meet prescribed National Ambient Air Quality Standards over the specified assessment period.
- **Airshed Approach:** Management of air pollution across a geographical region sharing a common atmospheric environment rather than restricting interventions to individual administrative boundaries.

Mains Enrichment:

- “Clean air is not merely an environmental objective; it is a public-health, economic-productivity and climate-resilience imperative.”
- **Way forward:** Shift from city-wide averages to **airshed-based planning**, from generic measures to **source-specific interventions**, and from government-led programmes to **whole-of-society participation**.

Best Institute for OAS/IAS

QUESTIONS

1. Consider the following statements regarding Antimicrobial Resistance (AMR) and Carbapenem resistance:

- (1) Gram-negative bacteria stain pink or red primarily due to their thin peptidoglycan layer and lipopolysaccharide-containing outer membrane.
- (2) Carbapenems are narrow-spectrum antibiotics restricted exclusively to Gram-positive bacterial infections.
- (3) Antibiotic resistance represents the bacterial component within the broader scope of AMR.
- (4) Healthcare-associated transmission can sustain AMR even if clinical antibiotic prescribing practices improve.

Which of the statements given above are correct?

- (A) 1, 2 and 3
- (C) 2 and 4
- (B) 1, 3 and 4
- (D) 1 and 3

2. Which of the following geographical features/territories are directly part of the main course or immediate basin of the Yarlung Zangbo–Brahmaputra river system?

- (1) Tibetan Plateau
- (2) Great Bend near Namcha Barwa
- (3) Siang River valley in Arunachal Pradesh
- (4) Chumbi Valley

How many of the above options are correct?

- (A) Only one
- (B) Only two
- (C) Only three
- (D) All four

3. Consider the following spatial progression of banking outreach in rural India, arranged from the most macro-institutional level down to the ultimate micro-borrower level:

- (1) Regional Rural Bank Head Office
- (2) Sponsor Bank Corporate Office
- (3) Rural Branch Office
- (4) Self-Help Group / Micro-borrower

Which of the following represents the correct hierarchical and operational flow of credit delivery?

- (A) 2 -> 1 -> 3 -> 4
- (B) 1 -> 2 -> 3 -> 4
- (C) 3 -> 1 -> 2 -> 4
- (D) 2 -> 3 -> 1 -> 4

4. Consider the following functional and material properties of Jute fibre:

- (1) High moisture absorption
- (2) Complete resistance to thermal conductivity and sound transmission
- (3) Low static generation
- (4) High resistance to microbial decomposition during retting

How many of the above are valid inherent functional properties or characteristics of Jute?

- (A) Only one
- (B) Only two
- (C) Only three
- (D) All four

5. Given below are two statements: One is labelled as Assertion (A) and the other is labelled as Reason (R):

Assertion (A): Relying solely on city-wide average ambient air quality measurements can result in ineffective urban air pollution management.

Reason (R): Atmospheric temperature inversions during winter months severely trap particulate matter near the ground surface.

In the light of the above statements, choose the correct answer:

- (A) Both A and R are true and R is the correct explanation of A
- (B) Both A and R are true but R is NOT the correct explanation of A
- (C) A is true but R is false
- (D) A is false but R is true

ANSWER KEY

1 – Answer (C), 2 – Answer (C), 3 – Answer (A), 4 – Answer (B), 5 – Answer (B)



OAS HUB

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In today's fast-changing world, staying updated with current affairs is essential for both academic success and professional growth. Awareness of national and international events not only broadens general knowledge but also sharpens critical and analytical thinking skills. It enables individuals to form well-informed opinions, which are crucial for competitive examinations, group discussions, interviews, and impactful essay writing.

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