GENERAL STUDIES III

Seventh Nilgiri-Class Frigate: Project 17A & Indian Navy

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The reported handover of the seventh Nilgiri-class stealth frigate to the Indian Navy marks an important milestone in India's indigenous naval shipbuilding programme under Project 17A. Designed to strengthen maritime security, operational capabilities and strategic autonomy, these advanced frigates reflect India's growing defence manufacturing ecosystem and commitment to Atmanirbhar Bharat. This article explores Project 17A, stealth technology, naval modernisation, Indian Ocean security, defence indigenisation, strategic challenges and their relevance for UPSC Prelims and Mains 2027.

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Why in the News?

The seventh Nilgiri-class stealth frigate under Project 17A has reportedly been handed over to the Indian Navy, representing an important milestone in India's indigenous naval shipbuilding programme.

Project 17A reflects India's efforts to develop advanced surface combatants through domestic design, manufacturing, systems integration and technological innovation.

The programme has considerable significance for maritime security, defence self-reliance, strategic autonomy and India's ability to protect its economic and security interests across the Indian Ocean Region.

However, the reported handover should not be confused with formal commissioning or confirmation of full operational readiness.

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GS III

UPSC Syllabus Relevance

Examination	Relevant Topics
UPSC Prelims	Project 17A, Indian Navy, warship classification, stealth technology and defence manufacturing.
GS Paper II	Indian Ocean geopolitics, international cooperation and India's strategic interests.
GS Paper III	Defence technology, maritime security, indigenisation of technology and industrial development.
Essay Paper	Strategic autonomy, technological self-reliance and national security.
UPSC Interview	Indian Navy modernisation, maritime strategy and Atmanirbhar Bharat.

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1. What Is Project 17A?

Project 17A is an important Indian naval shipbuilding programme involving the construction of seven Nilgiri-class guided-missile stealth frigates.

The programme builds upon the experience gained through Project 17, which produced the Shivalik-class frigates.

Project 17A incorporates improvements in ship design, signature management, survivability, automation, sensors and integrated systems.

The programme also demonstrates the development of India's domestic capabilities in naval architecture, advanced engineering and complex systems integration.

Project 17A at a Glance

Particulars	Details
Project Name	Project 17A
Warship Class	Nilgiri Class
Vessel Category	Guided-Missile Stealth Frigate
Total Planned Vessels	Seven
Predecessor Programme	Project 17 — Shivalik Class
Construction Agencies	Mazagon Dock Shipbuilders Limited and Garden Reach Shipbuilders and Engineers
Design Organisation	Indian Navy's Warship Design Bureau
Primary Significance	Naval modernisation, indigenous manufacturing and maritime security

UPSC Prelims Important Fact:
Project 17A is associated with Nilgiri-class frigates, whereas Project 17 is associated with Shivalik-class frigates.

2. Seven Nilgiri-Class Stealth Frigates

The Project 17A programme comprises seven vessels named after Indian mountain ranges and hills.

Vessel Name	Construction Shipyard

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Nilgiri	Mazagon Dock Shipbuilders Limited
Udaygiri	Mazagon Dock Shipbuilders Limited
Taragiri	Mazagon Dock Shipbuilders Limited
Mahendragiri	Mazagon Dock Shipbuilders Limited
Himgiri	Garden Reach Shipbuilders and Engineers
Dunagiri	Garden Reach Shipbuilders and Engineers
Vindhyagiri	Garden Reach Shipbuilders and Engineers

The names above represent the programme's vessels and their associated shipyards. The table does not indicate their individual commissioning dates or current operational status.

> **Important:**
> The reported handover of the seventh frigate is a programme-level milestone. The specific vessel identity and formal commissioning status should be confirmed through official naval announcements.

3. Important Indian Naval Shipbuilding Institutions

Mazagon Dock Shipbuilders Limited (MDL)

Mazagon Dock Shipbuilders Limited, located in Mumbai, Maharashtra, is a major Indian defence shipbuilding enterprise.

It contributes to the construction of warships and submarines and plays an important role in India's naval manufacturing ecosystem.

Garden Reach Shipbuilders and Engineers (GRSE)

Garden Reach Shipbuilders and Engineers, headquartered in Kolkata, West Bengal, is another important Indian defence shipbuilding organisation.

GRSE contributes to the construction of frigates, corvettes, patrol vessels and other maritime platforms.

Warship Design Bureau

The Indian Navy's Warship Design Bureau contributes to indigenous warship design, naval architecture and the integration of complex engineering systems.

Cochin Shipyard Limited

Cochin Shipyard Limited, located in Kochi, Kerala, is an important Indian shipbuilding and ship-repair enterprise associated with the construction of India's indigenous aircraft carrier, INS Vikrant.

Shipyard	Location
Mazagon Dock Shipbuilders Limited	Mumbai, Maharashtra
Garden Reach Shipbuilders and Engineers	Kolkata, West Bengal

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Shipyard	Location
Cochin Shipyard Limited	Kochi, Kerala
Goa Shipyard Limited	Vasco da Gama, Goa
Hindustan Shipyard Limited	Visakhapatnam, Andhra Pradesh

4. Major Features of Nilgiri-Class Frigates

Nilgiri-class frigates are modern multi-role surface combatants intended to strengthen the Indian Navy's capabilities across different maritime environments.

Stealth-Oriented Design

The vessels incorporate design principles intended to reduce detectability and improve survivability.

Multi-Role Capabilities

Modern frigates are designed to support multiple naval responsibilities, including maritime surveillance, fleet protection and anti-submarine operations.

Advanced Sensors

Integrated sensors support maritime awareness, navigation and the detection and classification of potential threats.

Integrated Combat Systems

Modern combat management systems help coordinate information from multiple onboard systems and support decision-making.

Automation and Systems Integration

Automation can improve the efficiency of ship management, machinery monitoring and information processing.

Improved Survivability

Modern naval architecture emphasises reliability, damage control, safety and continued functioning under challenging conditions.

Modular Construction

Modular shipbuilding involves constructing major ship sections separately before integrating them into the complete vessel.

This approach can improve manufacturing coordination, quality assurance and construction efficiency when supported by effective project management.

Indigenous Design

?

Modular Construction

?

Systems Integration

?

Testing and Quality Assurance

?

Delivery and Operational Preparation

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5. Understanding Stealth Technology in Naval Ships

Stealth technology refers to a combination of design and engineering measures intended to reduce the detectability of a platform.

In naval applications, stealth is not limited to radar visibility. Warships may produce several different types of detectable signatures.

Signature	Meaning
Radar Signature	Characteristics associated with the reflection of radar signals.
Acoustic Signature	Sound generated by machinery, propulsion and movement through water.
Infrared Signature	Heat emissions associated with engines, machinery and other systems.
Electromagnetic Signature	Detectable electromagnetic emissions associated with onboard systems.
Visual Signature	Characteristics that influence visual detection of a vessel.

Why Is Stealth Technology Important?

- Improves platform survivability.
- Reduces detectability in certain operational conditions.
- Supports modern maritime operations.
- Encourages advanced materials and engineering research.
- Promotes technological innovation in naval architecture.

UPSC Examination Trap:
Stealth does not mean complete invisibility. It refers to reducing the probability or effectiveness of detection under particular conditions.

6. Difference Between Frigates, Destroyers, Corvettes and Aircraft Carriers

Naval vessels are classified according to their design, size, capabilities and intended operational roles. Modern classifications may overlap between different navies.

Warship Type	General Characteristics	Primary Role
Corvette	Generally smaller surface combatant.	Coastal defence, patrol and specialised missions.
Frigate	Versatile surface combatant.	Fleet escort, maritime surveillance and multi-role operations.
Destroyer	Generally larger and highly capable surface combatant.	Fleet defence and advanced multi-role operations.

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Warship Type	General Characteristics	Primary Role
Aircraft Carrier	Large naval platform supporting aircraft operations.	Sea-based aviation and maritime power projection.
Submarine	Vessel capable of operating underwater.	Underwater surveillance, deterrence and naval operations.
Offshore Patrol Vessel	Platform designed primarily for patrol responsibilities.	Maritime monitoring, policing and protection of maritime interests.

Remember for UPSC:
Nilgiri-class vessels are frigates. Visakhapatnam-class vessels are destroyers. INS Vikrant is an aircraft carrier.

7. Important Indian Naval Modernisation Projects

Project	Associated Class or Programme	Vessel Type
Project 17	Shivalik Class	Frigate
Project 17A	Nilgiri Class	Stealth Frigate
Project 15	Delhi Class	Destroyer
Project 15A	Kolkata Class	Destroyer
Project 15B	Visakhapatnam Class	Destroyer
Project 28	Kamorta Class	Anti-Submarine Warfare Corvette
Project 75	Kalvari Class	Conventional Submarine
Project 75(I)	Conventional Submarine Acquisition Programme	Submarine
IAC-1	INS Vikrant	Indigenous Aircraft Carrier

These programmes illustrate India's efforts to develop a diversified naval fleet capable of addressing different maritime security requirements.

8. Difference Between Launch, Delivery and Commissioning

The construction and induction of a naval warship involve multiple engineering, administrative and operational milestones.

Stage	Meaning
Design	Development of the vessel's architecture and engineering requirements.
Keel Laying	Traditional milestone marking an important stage in ship construction.

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Stage	Meaning
Launching	Introduction of the constructed hull into water.
Outfitting	Installation and integration of machinery, equipment and onboard systems.
Sea Trials	Testing of vessel performance and systems under maritime conditions.
Delivery or Handover	Transfer of the vessel from the shipbuilder to the receiving authority.
Commissioning	Formal induction of the vessel into naval service.
Operational Preparation	Training, integration and readiness activities necessary for assigned responsibilities.

Design and Construction

?

Launch and Outfitting

?

Testing and Sea Trials

?

Delivery or Handover

?

Commissioning

?

Operational Integration

Current Affairs Alert:
The reported handover of the seventh Nilgiri-class frigate does not automatically establish that the vessel has been formally commissioned or has achieved full operational readiness.

9. Defence Indigenisation and Atmanirbhar Bharat

Defence indigenisation refers to the development of domestic capabilities in defence research, design, manufacturing, testing, maintenance and technological innovation.

Project 17A demonstrates how naval procurement can contribute to a broader industrial ecosystem rather than merely increasing the number of warships.

Major Components of Defence Indigenisation

- Domestic naval architecture and engineering.
- Indigenous component manufacturing.
- Advanced materials development.
- Research and development.

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- Domestic electronics and sensor capabilities.
- Testing and quality assurance infrastructure.
- Maintenance, repair and overhaul capabilities.
- Development of skilled technical manpower.
- Participation of private enterprises and MSMEs.

Important Government Initiatives

Initiative	Objective
Make in India	Promote domestic manufacturing and industrial investment.
Atmanirbhar Bharat	Strengthen domestic capabilities and economic resilience.
Defence Acquisition Procedure 2020	Provide a procurement framework with emphasis on indigenous capabilities.
Innovations for Defence Excellence (iDEX)	Encourage innovation by startups, researchers and technology enterprises.
Positive Indigenisation Lists	Promote domestic procurement of specified defence items under applicable timelines.
Defence Industrial Corridors	Develop defence manufacturing ecosystems in Uttar Pradesh and Tamil Nadu.
SRIJAN Portal	Facilitate identification of defence indigenisation opportunities.

GS Paper III Analytical Perspective:
True defence self-reliance requires domestic design ownership, critical technology development, dependable supply chains and lifecycle maintenance capabilities rather than final assembly alone.

10. Significance for India's Maritime Security

India occupies a strategically important position in the Indian Ocean Region. Its maritime environment influences international trade, energy security, economic development and regional stability.

A modern naval fleet helps India protect its legitimate maritime interests and contribute to a stable regional maritime environment.

Protection of Maritime Trade

India depends significantly on maritime transportation for international merchandise trade and energy supplies.

Maritime Domain Awareness

Maritime domain awareness involves developing an effective understanding of activities, developments and potential risks within the maritime environment.

Protection of Economic Interests

India's maritime interests include offshore energy infrastructure, fisheries, ports, shipping and other economic activities.

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Regional Stability

Naval cooperation, maritime diplomacy and coordinated security initiatives can support regional confidence and stability.

Humanitarian Assistance and Disaster Relief

Naval forces can support evacuation, disaster relief, medical assistance and emergency logistics during maritime and regional crises.

Counter-Piracy and Maritime Cooperation

Modern naval capabilities contribute to international efforts against piracy and other maritime security challenges, subject to applicable legal frameworks.

11. Sea Lines of Communication and Strategic Chokepoints

Sea Lines of Communication, commonly known as SLOCs, are maritime routes used for commercial transportation, logistics and strategic movement.

Disruptions along major maritime routes can affect shipping costs, energy supplies, international trade and global supply chains.

Strategic Chokepoint	Geographical Significance
Strait of Hormuz	Connects the Persian Gulf with the Gulf of Oman.
Strait of Malacca	Connects the Andaman Sea with the Singapore Strait and wider South China Sea routes.
Bab-el-Mandeb	Connects the Red Sea with the Gulf of Aden.
Suez Canal	Connects the Mediterranean Sea with the Red Sea.
Sunda Strait	Separates the Indonesian islands of Java and Sumatra.
Lombok Strait	Separates Bali and Lombok in Indonesia.

UPSC Geography Linkage:
Aspirants should revise important maritime chokepoints, neighbouring countries, connecting water bodies and their relevance to international trade.

12. India's Maritime Vision: SAGAR and MAHASAGAR

SAGAR

SAGAR stands for Security and Growth for All in the Region. It was articulated by India in 2015 as a vision for regional maritime cooperation.

It emphasises collective security, economic development, maritime cooperation and capacity building.

MAHASAGAR

MAHASAGAR stands for Mutual and Holistic Advancement for Security and Growth Across Regions.

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Articulated in 2025, the vision reflects a broader approach to cooperation, security, development and engagement across regions.

Important Dimensions of Maritime Cooperation

- Regional maritime security.
- Capacity building and training.
- Information sharing.
- Humanitarian assistance.
- Disaster risk reduction.
- Sustainable use of ocean resources.
- Economic and technological cooperation.

Important Maritime Institutions and Initiatives

Institution or Initiative	Significance
Indian Ocean Rim Association (IORA)	Regional cooperation among Indian Ocean countries.
Indian Ocean Naval Symposium (IONS)	Promotes dialogue and cooperation among regional navies.
Information Fusion Centre – Indian Ocean Region	Supports maritime information sharing and domain awareness.
Indo-Pacific Oceans Initiative (IPOI)	Promotes practical maritime cooperation across the Indo-Pacific.
QUAD	Cooperation among India, Australia, Japan and the United States across multiple strategic and developmental areas.

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13. Economic and Industrial Significance of Indigenous Shipbuilding

Naval shipbuilding is a technology-intensive industrial activity involving numerous suppliers, engineering disciplines and specialised manufacturing capabilities.

Domestic warship construction can generate economic benefits beyond the defence sector.

Employment Generation

Shipbuilding creates opportunities for engineers, technicians, welders, designers, quality professionals and skilled industrial workers.

Development of MSMEs

Smaller enterprises can participate in the production of components, industrial equipment, electronic systems and specialised services.

Technological Spillovers

Research and engineering capabilities developed for defence shipbuilding may also support civilian maritime manufacturing and other advanced industrial sectors.

Reduction in Import Dependence

Domestic manufacturing and maintenance capabilities can reduce dependence on selected foreign suppliers and improve supply-chain resilience.

Defence Export Potential

Competitive shipbuilding capabilities may create export opportunities, subject to international demand, regulatory approvals, quality standards and commercial competitiveness.

Lifecycle Economic Benefits

Domestic repair, maintenance and upgrade capabilities can improve long-term availability and reduce exposure to external supply disruptions.

Defence Procurement

?

Domestic Manufacturing

?

MSME and Supplier Development

?

Skilled Employment and Innovation

?

Industrial Competitiveness

?

Strategic and Economic Resilience

14. Challenges in India's Naval Modernisation

Challenge	Potential Implication
Critical Technology Dependence	Selected advanced components may remain dependent on foreign suppliers.
Project Delays	Construction and integration delays may affect planned fleet development.
Cost Escalation	Complex engineering programmes require effective financial management.
Skilled Manpower	Advanced shipbuilding requires specialised technical expertise.
Research and Development	Continuous investment is necessary to develop critical technologies.
Supply-Chain Vulnerability	Dependence on limited suppliers may affect component availability.
Lifecycle Maintenance	Warships require reliable spares, upgrades and long-term technical support.
Budgetary Trade-Offs	Resources must be balanced across different defence and developmental requirements.
Fleet Composition	Surface combatants, submarines, aircraft and unmanned systems require balanced investment.

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Challenge	Potential Implication
Operational Readiness	Delivery of a vessel must be supported by training, logistics and systems integration.

Critical Analysis:
The success of naval modernisation should not be assessed solely through the number of vessels constructed. Operational availability, lifecycle costs, training, indigenous technological depth and strategic suitability are equally important indicators.

15. Way Forward

Strengthen Indigenous Research and Development

India should encourage collaboration among defence research institutions, shipyards, universities, startups and private industries.

Develop Critical Component Capabilities

Domestic capabilities in specialised machinery, propulsion-related technologies, electronics and advanced materials should receive sustained attention.

Improve Shipyard Productivity

Modern project management, digital engineering, modular construction and quality assurance can improve construction efficiency.

Promote MSME Participation

Supplier development programmes, technical assistance and predictable procurement opportunities can strengthen domestic industrial participation.

Enhance Lifecycle Maintenance

Maintenance infrastructure, spare-parts availability and technical training should be integrated into procurement planning.

Maintain a Balanced Naval Fleet

Investment decisions should consider surface vessels, submarines, maritime aviation, coastal surveillance and emerging technologies.

Encourage Maritime Cooperation

Regional partnerships, information sharing and humanitarian cooperation can complement domestic naval capabilities.

Improve Transparency and Accountability

Defence programmes should be assessed through appropriate indicators of cost efficiency, delivery performance, technological self-reliance and operational availability.

Indigenous Research and Innovation

?

Domestic Industrial Capability

?

Reliable Naval Platforms

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?

Operational Readiness

?

Maritime Security and Strategic Autonomy

16. UPSC Prelims Quick Revision Notes

Concept	Important Examination Fact
Project 17A	Nilgiri-class guided-missile stealth frigates.
Project 17	Shivalik-class frigates.
Project 15B	Visakhapatnam-class destroyers.
Project 15A	Kolkata-class destroyers.
Project 28	Kamorta-class corvettes.
Project 75	Kalvari-class conventional submarines.
INS Vikrant	India's first indigenously built aircraft carrier.
Project 17A Fleet Size	Seven planned frigates.
MDL	Mazagon Dock Shipbuilders Limited, Mumbai.
GRSE	Garden Reach Shipbuilders and Engineers, Kolkata.
Warship Design Bureau	Indian Navy's indigenous warship design organisation.
Stealth Technology	Reduces detectability; does not ensure invisibility.
SLOC	Sea Lines of Communication.
SAGAR	Security and Growth for All in the Region.
MAHASAGAR	Mutual and Holistic Advancement for Security and Growth Across Regions.
IORA	Indian Ocean Rim Association.
IONS	Indian Ocean Naval Symposium.
iDEX	Innovations for Defence Excellence.
Indian Navy Day	4 December.
Commissioning	Formal induction of a vessel into naval service.

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17. UPSC Prelims Practice MCQs

Attempt these original UPSC-oriented practice questions before revealing the answers.

Question 1

With reference to Project 17A, consider the following statements:

1. It is associated with Nilgiri-class stealth frigates.
2. It builds upon India's experience with Project 17.
3. It is exclusively a nuclear-powered submarine construction programme.

Which of the statements given above are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Reveal Answer and Explanation

Correct Answer: B. 1 and 2 only

Project 17A involves Nilgiri-class stealth frigates and builds upon the earlier Shivalik-class programme. It is not a nuclear submarine programme.

Question 2

Consider the following pairs:

1. Project 17A — Nilgiri Class
2. Project 15B — Visakhapatnam Class
3. Project 28 — Kamorta Class
4. Project 75 — Kalvari Class

How many of the above pairs are correctly matched?

A. Only one
B. Only two
C. Only three
D. All four

Reveal Answer and Explanation

Correct Answer: D. All four

All four projects are correctly matched with their respective naval vessel classes.

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Question 3

Which of the following shipyards are associated with Project 17A?

1. Mazagon Dock Shipbuilders Limited.
2. Garden Reach Shipbuilders and Engineers.
3. Cochin Shipyard Limited.

Select the correct answer:

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Reveal Answer and Explanation

Correct Answer: A. 1 and 2 only

Project 17A frigates are constructed by Mazagon Dock Shipbuilders Limited and Garden Reach Shipbuilders and Engineers.

Question 4

With reference to stealth technology in naval vessels, consider the following statements:

1. It may involve reducing radar detectability.
2. It may involve managing acoustic and infrared signatures.
3. It guarantees complete invisibility under all operating conditions.

Which of the statements given above are correct?

A. 1 only
B. 3 only
C. 1 and 2 only
D. 1, 2 and 3

Reveal Answer and Explanation

Correct Answer: C. 1 and 2 only

Stealth technology reduces detectability by managing different signatures. It does not guarantee complete invisibility.

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Question 5

Which of the following best describes the commissioning of a naval warship?

A. Beginning of its construction.

B. Introduction of its hull into water.

C. Completion of its initial design.

D. Formal induction of the vessel into naval service.

Reveal Answer and Explanation

Correct Answer: D.

Commissioning formally introduces a warship into naval service. It is distinct from launching, delivery and other construction milestones.

Question 6

Consider the following pairs:

1. Strait of Hormuz — Persian Gulf and Gulf of Oman.
2. Bab-el-Mandeb — Red Sea and Gulf of Aden.
3. Suez Canal — Mediterranean Sea and Red Sea

How many of the above pairs are correctly matched?

A. Only one

B. Only two

C. All three

D. None

Reveal Answer and Explanation

Correct Answer: C. All three

All three maritime chokepoints are correctly matched with the water bodies they connect.

Question 7

With reference to defence indigenisation in India, consider the following statements:

1. It includes domestic research and design capabilities.
2. It includes maintenance and lifecycle support.
3. It necessarily requires complete elimination of every foreign component before a platform can be considered indigenous.

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Which of the statements given above are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Reveal Answer and Explanation

Correct Answer: A. 1 and 2 only

Defence indigenisation includes domestic design, manufacturing and maintenance capabilities. Indigenous platforms may still contain selected imported components.

Question 8

The term SAGAR, in the context of India's maritime vision, stands for:

A. Strategic Alliance for Global Asian Resources.

B. Security and Growth for All in the Region.

C. Sustainable Agreement for Global Arctic Research.

D. Security and Governance of Asian Rivers.

Reveal Answer and Explanation

Correct Answer: B.

SAGAR stands for Security and Growth for All in the Region. It reflects India's approach to maritime cooperation and regional development.

Question 9

Which of the following may be benefits of indigenous naval shipbuilding?

1. Development of skilled manpower.
2. Expansion of domestic industrial supply chains.
3. Improvement in maintenance capabilities.
4. Promotion of technological innovation.

Select the correct answer:

A. 1 and 2 only

B. 2 and 3 only

C. 1, 3 and 4 only

D. 1, 2, 3 and 4

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Reveal Answer and Explanation

Correct Answer: D.

All four are potential benefits of a well-developed indigenous naval shipbuilding ecosystem.

Question 10

With reference to maritime security, consider the following statements:

1. Sea Lines of Communication are important for international trade and logistics.
2. Maritime domain awareness involves understanding activities and risks within the maritime environment.
3. The delivery of a new warship alone guarantees complete maritime security.

Which of the statements given above are correct?

A. 1 only
B. 2 and 3 only
C. 1 and 2 only
D. 1, 2 and 3

Reveal Answer and Explanation

Correct Answer: C. 1 and 2 only

Maritime security requires a combination of platforms, surveillance, trained personnel, logistics, diplomacy and institutional cooperation. Delivery of a single vessel cannot guarantee complete maritime security.

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18. UPSC Mains Practice Questions and Model Answer

Mains Question 1 — GS Paper III

Examine the significance of indigenous naval shipbuilding programmes such as Project 17A in strengthening India's maritime security, industrial capabilities and strategic autonomy. Discuss the associated challenges.

15 Marks | 250 Words

Model Answer

Introduction:

India's geographical position in the Indian Ocean and its dependence on maritime trade make naval modernisation an important component of national security. Project 17A, involving indigenous construction of Nilgiri-class stealth frigates, reflects India's efforts to strengthen maritime capabilities and defence self-reliance.

Body:

Indigenous naval shipbuilding contributes to maritime security by supporting fleet modernisation, maritime surveillance, protection of sea lines of communication and sustained naval presence.

Strategically, domestic design and manufacturing capabilities reduce dependence on external suppliers and strengthen India's ability to pursue independent security and foreign policy objectives.

Economically, naval construction promotes advanced engineering, skilled employment, MSME participation, research and development, and domestic industrial supply chains. These capabilities may also generate technological spillovers into civilian maritime industries.

However, several challenges remain. Dependence on imported critical technologies, construction delays, cost escalation, limited specialised manpower and lifecycle maintenance requirements may constrain the effectiveness of naval modernisation.

Moreover, investment in surface combatants must be balanced with submarines, maritime aviation, coastal surveillance and emerging technologies.

India should therefore strengthen indigenous research, promote industry-academia collaboration, develop critical component manufacturing, improve shipyard productivity and ensure reliable maintenance infrastructure.

Conclusion:

Project 17A demonstrates the potential of defence indigenisation to connect national security with industrial development. Its long-term success should be assessed through operational readiness, technological self-reliance, cost efficiency and contribution to a secure and stable maritime environment.

Mains Question — GS Paper III

Defence indigenisation is not merely an import substitution strategy but a foundation for technological and strategic autonomy. Discuss.

15 Marks | 250 Words

Suggested Answer Structure

- Define defence indigenisation.
- Explain the importance of domestic design ownership.
- Discuss national security and supply-chain resilience.
- Analyse employment and industrial benefits.
- Identify critical technology dependencies.
- Suggest research, innovation and procurement reforms.
- Conclude with strategic autonomy and sustainable development.

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Mains Question 3 — GS Paper II

Discuss the strategic significance of the Indian Ocean Region for India's foreign policy and economic security.

15 Marks | 250 Words

Mains Question 4 — GS Paper III

Explain the role of maritime domain awareness and regional cooperation in addressing contemporary maritime security challenges.

10 Marks | 150 Words

Mains Question 5 — GS Paper III

Examine how indigenous defence manufacturing can contribute to employment generation, MSME development and technological innovation in India.

15 Marks | 250 Words

19. Civil Service Gurukul: Key Takeaways

- Project 17A involves seven Nilgiri-class stealth frigates.
- Project 17A builds upon the earlier Shivalik-class programme.
- MDL and GRSE are the two principal construction shipyards associated with Project 17A.
- Stealth technology reduces detectability rather than guaranteeing invisibility.
- Frigates and destroyers are distinct categories of naval surface combatants.
- Delivery, commissioning and operational readiness are different milestones.
- Indigenous shipbuilding contributes to industrial development and strategic autonomy.
- Maritime security is essential for protecting trade, energy supplies and economic interests.
- Sea Lines of Communication are important for international maritime connectivity.
- Defence indigenisation requires domestic research, design, manufacturing and maintenance capabilities.
- Naval modernisation must balance multiple platform categories and budgetary requirements.
- Operational effectiveness depends on training, logistics, interoperability and maintenance.

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20. Frequently Asked Questions

What is Project 17A?

Project 17A is India's naval shipbuilding programme for seven Nilgiri-class guided-missile stealth frigates.

Which shipyards are associated with Project 17A?

Mazagon Dock Shipbuilders Limited and Garden Reach Shipbuilders and Engineers are associated with the construction of Project 17A frigates.

What is stealth technology in naval ships?

Naval stealth technology reduces the detectability of warships by managing radar, acoustic, infrared and other signatures.

Is handing over a warship the same as commissioning?

No. Handover refers to delivery or transfer of a vessel, whereas commissioning formally introduces the vessel into naval service.

Which naval programme is associated with Visakhapatnam-class destroyers?

Project 15B is associated with Visakhapatnam-class guided-missile destroyers.

What is the difference between Project 17 and Project 17A?

Project 17 is associated with Shivalik-class frigates, while Project 17A involves the more advanced Nilgiri-class frigates.

What is a frigate?

A frigate is a naval surface combatant generally designed for fleet escort, maritime surveillance and multiple naval responsibilities.

What does SAGAR stand for?

SAGAR stands for Security and Growth for All in the Region.

Why is indigenous shipbuilding important for India?

It supports defence self-reliance, skilled employment, domestic technological development, supply-chain resilience and strategic autonomy.

Why is Project 17A important for UPSC 2027?

The programme connects defence technology, maritime security, indigenous manufacturing, strategic autonomy and economic development, particularly under GS Paper III.

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21. Conclusion

The reported handover of the seventh Nilgiri-class stealth frigate represents an important milestone in India's continuing efforts to develop indigenous naval shipbuilding capabilities.

Project 17A demonstrates the relationship between national security, advanced engineering, domestic industrial development and technological self-reliance.

A modern and balanced naval fleet can contribute to the protection of India's maritime interests, international trade routes and regional security.

However, the long-term effectiveness of naval modernisation depends on more than the construction and delivery of warships. It requires trained personnel, reliable logistics, technological innovation, lifecycle maintenance and appropriate strategic planning.

India must continue strengthening its indigenous defence ecosystem while promoting responsible maritime cooperation and sustainable industrial development.

For UPSC aspirants, Project 17A provides an important case study connecting defence technology, maritime geopolitics, economic development and strategic autonomy.

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Educational and Editorial Disclaimer: This article has been prepared for UPSC examination preparation and educational purposes. The reported handover of the seventh Nilgiri-class frigate is based on available news material dated 28 November 2026. The specific vessel identity, official delivery particulars and commissioning status require independent official confirmation. Additional programme information, conceptual explanations and policy analysis are provided as educational background. The article does not claim that delivery automatically establishes full operational readiness.

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