Anti-Submarine Warfare Shallow Water Craft (ASW-SWC) Exam Capsule

Overview

- ✓ **Builder** : Garden Reach Shipbuilders & Engineers (GRSE), Kolkata.
- ✓ **Total Ships** : 8 planned.
- ✓ **Length** : 77 m | **Draught** : 2.7 m.
- ✓ **Indigenous Content** : Over 80%.
- ✓ **Propulsion**: Diesel engine + Waterjet propulsion (agility in shallow waters).
- ✓ **Armament** : Lightweight torpedoes, ASW rockets, 30mm naval gun.
- ✓ **Role** : Subsurface surveillance, ASW in shallow waters, Coastal Defence, LIMO (Low-Intensity Maritime Ops).

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Comparison chart of
INS Arnala vs INS Androth quick recall 👇

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Comparison chart of
INS Arnala vs INS Androth quick recall 👇

Feature	INS Arnala	INS Androth
Series	1st ship of ASW-SWC (Arnala-class)	2nd ship of ASW-SWC (Arnala-class)
Builder	GRSE, Kolkata	GRSE, Kolkata
Delivery Date	May 2025	13 Sept 2025
Commissioning Date	June 2025	6 Oct 2025
Place of Commissioning	Naval Dockyard, Mumbai	Naval Dockyard, Visakhapatnam

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Comparison chart of
INS Arnala vs INS Androth quick recall 👇

Feature	INS Arnala	INS Androth
Weapons	Lightweight torpedoes, ASW rockets, 30 mm naval gun	Lightweight torpedoes, ASW rockets, 30 mm naval gun
Operational Role	Subsurface surveillance, ASW in shallow waters, coastal defence, LIMO	Subsurface surveillance, ASW in shallow waters, coastal defence, LIMO
Name Origin	Arnala Island (Maharashtra)	Androth Island (Lakshadweep)

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Comparison chart of
INS Arnala vs INS Androth quick recall 👇

Feature	INS Arnala	INS Androth
Legacy	First of the class, no direct predecessor	Replaces legacy **INS Androth (P69)** (served 27 yrs)
Series Strength	First Part of 8-ship Arnala-class project	Second Part of 8-ship Arnala-class project

✅ **Quick Takeaway for NDA/CDS**:
INS Arnala → 1st ASW-SWC, commissioned **June 2025**, at Mumbai.
INS Androth → 2nd ASW-SWC, commissioning **6 Oct 2025**, at Visakhapatnam.

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The ASW-SWC (Arnala-class) ships are primarily designed for:
(a) Submarine-launched ballistic missile strikes
(b) Subsurface surveillance & shallow water ASW ✓
(c) Blue-water carrier strike operations
(d) Anti-aircraft defence

How many vessels are planned under the ASW-SWC (Arnala-class) project?
(a) 6
(b) 8 ✓
(c) 12
(d) 16

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Which shipyard is constructing the Arnala-class ASW-SWC series?

(a) Mazagon Dock Ltd.

(b) Cochin Shipyard Ltd.

(c) GRSE, Kolkata. ✓

(d) Hindustan Shipyard Ltd.

Which propulsion system is used in Arnala-class vessels?

(a) Nuclear propulsion

(b) Diesel-electric hybrid

(c) Diesel engine with waterjet propulsion ✓

(d) Gas turbine propulsion

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INS Arnala was commissioned at which location?

(a) Kochi

(b) Mumbai ✓

(c) Visakhapatnam

(d) Chennai

INS Androth will be commissioned at which naval dockyard?

(a) Mumbai

(b) Kochi

(c) Visakhapatnam ✓

(d) Chennai

The name *Androth* is derived from an island located in:
(a) Andaman & Nicobar Islands
(b) Lakshadweep Islands ✓
(c) Gujarat Coast
(d) Odisha Coast

The predecessor INS Androth (P69) served the Navy for how many years?
(a) 20 years
(b) 25 years
(c) 27 years ✓
(d) 30 years

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📌 Agni-Prime (Agni-P) Rail-based Missile Test – Key Facts

🚀 About the Test

Date: 24 Sept 2025.

Conducted by : **DRDO** & **Strategic Forces Command (SFC)**.

Launch Platform : **Rail-based mobile launcher** – **first-of-its-kind** for India.

Range : **1,000–2,000 km** (Intermediate Range Ballistic Missile).

Missile Type : **Two-stage, solid-fuel** ballistic missile.

Warhead Capability : High explosive, thermobaric, nuclear.

Weight : ~11,000 kg.

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📌 Agni-Prime (Agni-P) Rail-based Missile Test – Key Facts

🌍 Global Context

Countries with rail-based ballistic missile launch capability (before India):
Russia,
US,
China,
North Korea.

India now joins this **elite club**.

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📌 Agni-Prime (Agni-P) Rail-based Missile Test – Key Facts

🔑 Strategic Significance

- Strengthens **second-strike capability** under India's **No First Use (NFU)** nuclear doctrine.
- Mobile launchers (road/rail/submarine) = **survivable platforms** vs. fixed silos (increasingly vulnerable).
- Rail network (70,000 km) gives **nationwide mobility**.
- Rail tunnels → natural **concealment from satellite surveillance**.
- Cheaper & more scalable compared to **SLBM submarines**.

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📌 Agni-Prime (Agni-P) Rail-based Missile Test – Key Facts

⚙️ Why Agni-P?

- Upgrade over **Agni-I** (700–1000 km).
- Incorporates advanced propulsion & navigation from **Agni-IV & Agni-V**.
- Nuclear-capable version tested in **2021**.
- Part of India's **credible minimum deterrence**.

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Q1. The Agni-P missile tested in Sept 2025 has an operational range of:

(a) 500–1,000 km

(b) 700–1,500 km

(c) 1,000–2,000 km ✓

(d) 2,000–3,000 km

Q2. Which organisations jointly carried out the rail-based Agni-P test?

(a) DRDO & ISRO

(b) DRDO & Strategic Forces Command ✓

(c) DRDO & Indian Army

(d) DRDO & BEL

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Q3. Which countries had rail-based ballistic missile launch capability before India?

(a) US, Russia, China, North Korea ✓

(b) US, Russia, Japan, UK

(c) China, Pakistan, Israel, France

(d) Russia, Iran, US, South Korea

Q4. What is the major strategic advantage of rail-based launchers?

(a) Faster missile speed

(b) Concealment in tunnels & nationwide mobility ✓

(c) Higher payload capacity

(d) Cheaper warhead development

Q5. Agni-P is considered an upgrade over which earlier missile?
(a) Agni-I ✓
(b) Agni-II
(c) Agni-III
(d) Agni-IV

Q6. The Agni-P missile uses which propulsion system?
(a) Liquid fuel, two-stage
(b) Solid fuel, two-stage ✓
(c) Hybrid propulsion
(d) Cryogenic propulsion

Q7. What is the approximate mass of Agni-P?

(a) 7,000 kg

(b) 9,000 kg

(c) 11,000 kg ✓

(d) 13,000 kg

Q8. Rail-based mobile launchers primarily strengthen which doctrine of India's nuclear policy?

(a) First Strike Capability

(b) No First Use ✓

(c) Counterforce Doctrine

(d) Countervalue Doctrine

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🌊 Samudrayaan Project – Key Facts

📌 Overview

Aim: India's first **crewed deep-sea mission**, part of the **Deep Ocean Mission (DOM, approved 2021)**.

Target: Send **3 aquanauts** to **6,000 m depth** by **2027**.

Budget: ₹4,077 crore (5 years).

Nodal Agency: **National Institute of Ocean Technology (NIOT)**, Chennai.

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Samudrayaan Project – Key Facts

Global Context

Countries with deep-sea exploration:

- **US,**
- **Russia,**
- **China,**
- **Japan,**
- **France**.

India will join this **elite club**.

Training: In Sept 2025, Indian aquanauts **Cdr (Retd) Jatinder Pal Singh (5,002 m)** & **R Ramesh (4,025 m)** dived aboard French vessel *Nautile*.

This is the deepest an Indian has ever gone underwater. Until now, most submarine dives involving Indians were limited to 500 metres, with the previous record 670 metres

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Samudrayaan Project – Key Facts

Vehicle – Matsya 6000

Design: Submersible shaped like a big fish.
Personnel Sphere: 2.1 m diameter → holds 3 humans.
Mission Endurance: 12 hrs (normal), **96 hrs (emergency)**.
Sphere Material: Titanium alloy (80 mm thick) → withstands **600x sea-level pressure**.
Fabrication: Electron beam welding (by ISRO).
Initial Test: 500 m steel sphere wet test off Chennai (Feb 2025).

🌊 Samudrayaan Project – Key Facts

🎯 Objectives

Deep-sea mining tech (esp. **polymetallic nodules**: Mn, Fe, Ni, Co, rare earths).
Underwater robotics & vehicles.
Ocean climate change advisory services.
Deep-sea biodiversity exploration.
Freshwater & energy from oceans.
Advanced marine station (biology + engineering).

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🌊 Samudrayaan Project – Key Facts

⚠️ Challenges

Extreme Pressure: Precision in sphere thickness (80 mm titanium).

Life Support: Oxygen maintenance + CO_2 scrubbers + rebreather systems.

Human Factors: Long-duration confinement, restricted diet, no washroom access.

Communication: Radio waves don't penetrate deep → use **acoustic telephones** (sound waves). India developing indigenous systems.

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Q1. The Samudrayaan Project aims to send aquanauts to what maximum depth?

(a) 3,000 m

(b) 5,000 m

(c) 6,000 m ✓

(d) 10,000 m

Q2. The Samudrayaan Project is part of which larger mission?

(a) Atmanirbhar Bharat Mission

(b) Deep Ocean Mission ✓

(c) Gaganyaan Mission

(d) Sagarmala Project

Q3. The nodal agency for developing Matsya 6000 is:
(a) ISRO
(b) DRDO
(c) NIOT ✓
(d) INCOIS

Q4. The crewed submersible Matsya 6000 will be made of which material?
(a) Steel
(b) Aluminium alloy
(c) Titanium alloy ✓
(d) Carbon fibre

Q5. The Samudrayaan Project's approved budget is approximately:
(a) ₹2,500 crore
(b) ₹4,077 crore ✓
(c) ₹6,500 crore
(d) ₹8,000 crore

Q6. Which two Indian aquanauts dived in French vessel *Nautile* in Sept 2025?
(a) Shubhanshu Shukla & R Ramesh
(b) Cdr (Retd) Jatinder Pal Singh & R Ramesh ✓
(c) J P Singh & Shubhanshu Shukla
(d) Shubhanshu Shukla & Jatinder Pal Singh

Q7. The pressure at 6,000 m below sea level is approximately:
(a) 100 times sea-level
(b) 300 times sea-level
(c) 600 times sea-level ✓
(d) 1000 times sea-level

Q8. India developed an indigenous system for deep-sea communication using:
(a) Radio waves
(b) Optical fibre
(c) Acoustic telephone ✓
(d) Satellite relay

Q9. Polymetallic nodules, key targets of deep-sea mining, are rich in:
(a) Lithium & Uranium
(b) Iron, Manganese, Nickel, Cobalt, Rare Earths ✓
(c) Gold & Silver
(d) Titanium & Platinum

Q10. Matsya 6000 can sustain aquanauts for how long in an emergency?
(a) 12 hours
(b) 24 hours
(c) 48 hours
(d) 96 hours ✓