## TERMS IN NEWS

### The European Organization for Nuclear Research (CERN)



- The European Organization for Nuclear Research (CERN) was established in 1954. It is one of the world's largest and most respected centres for scientific research in particle physics.
- **Location:** It is located near **Geneva, Switzerland,** on the border between Switzerland and France.
- **Mission:** CERN's primary mission is to explore the fundamental properties of the universe through advanced particle physics research.
- **Aim:** CERN aims to explore dark matter, dark energy, and physics beyond the Standard Model, with upgrades to the **Large Hadron Collider (LHC) and plans for the Future Circular Collider (FCC).**

**Key Functions of CERN:**

- **Particle Physics Research:** CERN explores fundamental questions about the universe, including the nature of matter, antimatter, and the origins of the universe.
- **Particle Accelerators:** It operates the Large Hadron Collider (LHC), the **world's largest accelerator, to study particles by recreating conditions similar to the Big Bang.**
- **Higgs Boson Discovery:** CERN confirmed the existence of the Higgs boson in 2012, validating the Standard Model of particle physics.
- **International Collaboration:** With 23 member states and global partners, CERN fosters collaboration among thousands of scientists.
- **Technological Innovation:** CERN has driven breakthroughs like the World Wide Web and continues to lead in computing and data storage technologies.
- **Educational Outreach:** It supports science education through fellowships, internships, and training to inspire future physicists.
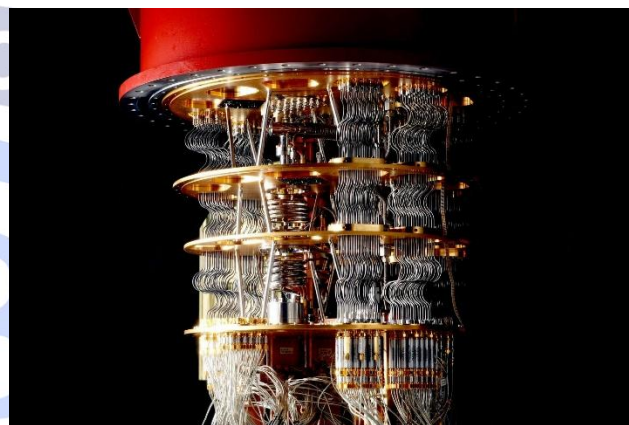
### Quantum Noise

- It refers to the **unwanted disturbances that affect quantum systems, leading to errors in quantum computations.**
- Unlike classical noise, which might simply add random errors to a signal, quantum

noise can have more complex and detrimental effects.

**What Causes Quantum Noise?**

- Quantum noise comes from the fact that energy—like light or radio waves—exists in discrete packets, or quanta.
- For example, light is made of photons, and radio waves are made of individual electromagnetic excitations.
- When you try to measure or amplify these signals, there's a natural limit to how accurately you can do so.
- This is a direct result of the Heisenberg uncertainty principle, which says you can't perfectly measure certain pairs of properties (like the strength and phase of a wave) at the same time.
- These **unavoidable fluctuations** are what we call quantum noise.
- Even if you had a perfect detector in a perfectly quiet room at absolute zero temperature, quantum noise would still be present.
- Quantum noise can arise from various sources, including thermal fluctuations, electromagnetic interference, imperfections in quantum gates, and interactions with the environment.
- Different types of quantum noise affect **qubits** in distinct ways. For example, phase noise alters the relative phase between the basis states of a qubit, while amplitude noise affects the probabilities of measuring different states.
- Understanding and characterizing these noise sources is crucial for error mitigation.

- It's a major challenge in the development of quantum computers, as it can cause qubits to lose their delicate quantum state, known as decoherence.
- Even small amounts of noise can lead to **decoherence**, causing qubits to **lose their superposition and entanglement properties.**
- This loss of quantum information can render computations meaningless and limit the size and complexity of feasible quantum algorithms



# PLACES IN NEWS

**South China Sea**

- It is an arm of the western Pacific Ocean that borders the Southeast Asian mainland.
- It embraces an area of about 1,423,000 square miles (3,685,000 square km), with a mean depth of 3,976 feet (1,212 metres).

**Boundaries:**

- It is bordered by China, Taiwan, Philippines, Malaysia, Indonesia, Brunei, and Vietnam.
- The southern boundary of the South China Sea is a rise in the seabed between Sumatra and Borneo, and the northern boundary stretches from the northernmost point of Taiwan to the coast of Fujian province, China, in the Taiwan Strait.
- It is connected by the Taiwan Strait with the East China Sea and by the Luzon Strait with the Philippine Sea (both marginal seas of the Pacific Ocean).
- The South China Sea and the East China Sea together form the China Sea.
- The two major archipelagos are known as the **Paracel Islands, and the Spratly Islands.**
- **Climate:** The weather in the sea is tropical and largely controlled by monsoons.
- It is the second most used sea lane in the world. It is a significant trade route for

crude oil from the Persian Gulf and Africa through the **Strait of Malacca** to Singapore, Thailand, Hong Kong, Taiwan, South Korea, and Japan.

- **Major Ports:** Hong Kong, Singapore, and Kaohsiung in southern Taiwan

**Maldives**



- The Maldives, officially the Republic of Maldives, and historically known as the Maldive Islands, is **an archipelagic country in South Asia located in the Indian Ocean.**
- The Maldives is **southwest of Sri Lanka and India,** about 750 kilometres from the Asian continent's mainland
- **Capital:** Male
- **Official language:** Dhivehi (an Indo-European language); Arabic, Hindi, and English are also spoken.
- **Religion:** Islam is the state religion and plays a central role in national governance.
- **Economy:** Heavily dependent on tourism, along with fisheries and foreign aid.

- **Constitution:** The 2008 Constitution defines a presidential system with direct elections for a maximum of two five-year terms.
- The Maldives has a tropical hot and humid climate, influenced by:
- Northeast monsoon (dry season: November to March), and
- Southwest monsoon (rainy season: June to August).

**Geographical Features**

- It is home to the 7th largest coral reef system in the world, contributing 3.14% of global reef area.
- The country has no rivers or streams and the average elevation is under 2 meters, making it highly vulnerable to sea-level rise.
- Barrier reefs provide natural protection against monsoon-related erosion and storm surges.
- The Maldives is an archipelagic state consisting of about 1,200 coral islands grouped in 26 atolls, located in the north-central Indian Ocean.
- It is strategically positioned astride major global sea lanes, making it vital for maritime trade and security in the IOR.
- The country lies south-southwest of India, separated from Lakshadweep by the Eight Degree Channel, a crucial sea route for India's maritime movement.

## SCHEMES IN NEWS

**PM Dhan Dhaanya Krishi Yojana**



- The PM Dhan Dhanya Krishi Yojana was launched under Union Budget 2025 by **Finance Minister Nirmala Sitharaman to improve agricultural conditions in 100 low-productivity districts across India.**
- The scheme aims to enhance rural prosperity by implementing specialized interventions and integrating existing agricultural schemes.
- It focuses on **boosting farm productivity, increasing credit access, and modernizing farming practices.**
- The program is expected to benefit 1.7 crore farmers across the identified districts.
- The scheme draws inspiration from the Aspirational Districts Program, which has successfully improved socio-economic indicators in backward regions.

**Key Features of the Scheme**

- The scheme **aims to bring together multiple existing agricultural schemes under one umbrella for better efficiency and impact.**

- It will introduce specialized interventions that cater to the unique challenges faced by each of the 100 identified districts.
- The government will leverage technology-driven solutions to help farmers adopt modern and sustainable agricultural practices.
- The scheme specifically targets districts with moderate crop intensity, low productivity, and limited access to institutional credit.
- It **aims to encourage financial inclusion by strengthening farmer access to government-backed financial programs and microfinance institutions.**
- By promoting formal credit channels, the scheme seeks to reduce farmers' reliance on informal moneylenders and prevent rural indebtedness.

### PM Kaushal Vikas Yojana

- It is the flagship scheme to encourage and promote skill development in the country by providing free short duration skill training and incentivizing this by providing monetary rewards to youth for skill certification.
- **Nodal Ministry:** Ministry of Skill Development and Entrepreneurship
- **Launched in:** It was launched in 2015 and is currently in its fourth phase (PMKVY 4.0).
- **Aim:** The aim of the scheme is to boost both industry and employability of youths.

### Phases of Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

- The first phase (PMKVY 1.0) was launched in 2015 as a pilot, focusing on short-term training and aiming to skill 24 lakh youth across the country.
- The second phase (PMKVY 2.0) ran from 2016 to 2020, featuring an expanded outreach with a target of skilling 1 crore youth.
- This phase introduced greater emphasis on placement and the Recognition of Prior Learning (RPL) to certify informally acquired skills.
- The third phase (PMKVY 3.0) was implemented from 2020 to 2021, emphasizing a decentralized and sector-specific approach.
- This phase also enhanced digital and hybrid training options and encouraged stronger state partnerships.
- The fourth phase (PMKVY 4.0) started in 2021 and is ongoing.
- It continues to prioritize alignment with market needs, digital skilling, rural outreach, and overall strengthening of the country's workforce development.

**Innovative initiatives by PMKVY:**

- **Special Projects:** Targeted skilling for marginalized groups included training 2,500 Bru-tribe candidates in Tripura, jail inmates in Assam and Manipur, and 13,834 (70% women) under the PANKH project across 18 states.
- **Traditional Crafts & Upskilling:** Under PMKVY 3.0, 2,243 women were trained in Jammu & Kashmir's Namda craft led by the Handicraft and Carpet Sector Skill Council.
- **Mainstreaming Skilling:** PMKVY supports flagship government initiatives (e.g., PM Surya Ghar, Vibrant Villages Programme, Beti Bachao Beti Padhao, Jal Jeevan Mission, Green Hydrogen Mission),

embedding skill development into these schemes for broad impact.

- **COVID-19 Response:** Over 1.2 lakh health workers were trained through a Customized Crash Course Programme for COVID Warriors.
- **Skill Hub Initiative:** Over 1.23 lakh youth trained using schools and colleges as vocational hubs, aligning with NEP 2020 (National Education Policy).
- **Recognition of Prior Learning (RPL):** Informal workers' skills are formally recognized, boosting employability without lengthy training.
- Digital & Outcome-Driven Reforms: The Skill India Digital Hub (SIDH) tracks training digitally, ensures Aadhaar-based validation, and links payments to performance.
- **Academic Mobility:** PMKVY 4.0 integrates skill qualifications with the Academic Bank of Credits (ABC), enabling transfer of credits between skill and formal education.

## PRACTICE QUESTIONS

Q1 : Which among the following is the correct answer regarding the location of Maldives ?
- A. South West of India
- B. North West of Sri Lanka
- C. South East of India
- D. North East of Sri Lanka

Q2 : Consider the following islands in the South China Sea
1. Paracel Islands
2. Scarborough Shoal
3. Spratly Islands

Arrange the above islands from North to South
- A. 1-2-3
- B. 3-2-1
- C. 1-3-2
- D. 2-1-3

Q3 : Which of the following operates the Large Hadron Collider (LHC), the world's largest accelerator, to study particles by recreating conditions similar to the Big Bang.
- A. NASA
- B. JAXA
- C. ESA
- D. CERN

Q4 : Which among the following refers to the unwanted disturbances that affect quantum systems, leading to errors in quantum computations.
- A. Qubits
- B. Superposition
- C. Entanglement
- D. Quantum Noise

Q5 : Consider the following statements regarding PM Dhan Dhanya Krishi Yojana
1. The scheme aims to bring together multiple existing agricultural schemes under one umbrella for better efficiency and impact.
2. It aims to improve agricultural conditions in 100 low-productivity districts across India.
3. It aims to encourage financial inclusion by strengthening farmer access to government-backed financial programs and microfinance institutions.

How many of the above statements are incorrect?
- A. Only One
- B. Only Two
- C. All of the Above
- D. None of the Above

**Answers**
1. A
2. A
3. D
4. D