DAILY CURRENT AFFAIRS 04-05-2024

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UNESCO/Guillermo Cano World Press Freedom Prize

Syllabus: GS-2: International Relations.

Context:

- **Palestinian journalists** *covering Gaza awarded 2024 UNESCO/Guillermo Cano World Press Freedom Prize.*

UNESCO supporting journalists in conflict worldwide

- *UNESCO helps journalists in* **areas of conflict and crisis** *around the world.*
- *In Gaza, UNESCO provides* **essential supplies to journalists**.
- **In Ukraine and Sudan**, *UNESCO creates safe working spaces and offers emergency grants to journalists.*
- **Journalists in Haiti receive** *protective gear and training from UNESCO.*
- *UNESCO supports* **independent media in Afghanistan**.
- *UNESCO promotes journalist safety globally through awareness campaigns, training, and coordinating the UN Plan of Action on the Safety of Journalists and the Issue of Impunity.*

About the UNESCO/Guillermo Cano World Press Freedom Prize

- *The UNESCO/Guillermo Cano* **World Press Freedom Prize** *was established in 1997.*
- *It recognizes individuals who have made* **outstanding contributions to defending** *or promoting press freedom worldwide, especially in dangerous circumstances.*
- *It's the only press freedom prize awarded to journalists* **within the UN System**.
- *Named after* **Guillermo Cano Isaza,** *a Colombian journalist assassinated in 1986.*
- **Funded by various organizations** *including the Guillermo Cano Isaza Foundation, the Helsingin Sanomat Foundation, the Namibia Media Trust, Democracy & Media Foundation Stichting Democratie & Media, and the Thomson Reuters Foundation.*

The paradox of India's global rise, its regional decline

Syllabus: GS-2: International Relations

Context:

- *One of the deeply perplexing paradoxes of contemporary Indian foreign policy is that a globally rising India is also a regionally declining power.*

Reasons for Global Rise:

- *Growth in absolute power through* **economic growth, military capabilities**, *and a young population.*
- *Inclusion in global institutions like G-20 and participation in multilateral groups such as the* **Quad, BRICS, and the Shanghai Cooperation Organisation**.
- **Increased attention on the Indo-Pacific region** *where India holds a central position.*

Reasons for Regional Decline:

- *Diminishing relative power compared to China.*
- *Loss of dominance in South Asia.*
- *Fundamental changes in South Asian geopolitics.*

Extraneous Factors in Regional Decline:

- *Despite its global rise, India's influence in South Asia has decreased compared to previous periods like the Cold War and in* **comparison to China's current influence**.
- *The decline is relative, not absolute, and is influenced by external factors.*

Paradoxical Relationship Between Global Prominence and Regional Decline:

- *Factors contributing to* **India's decline in regional influence** *also contribute to its global prominence.*
- *The* **American withdrawal** *from the region and China's expansion fill the power vacuum but also pose challenges for India.*

Impact of Indo-Pacific Focus:

- *While* **interest in the Indo-Pacific has grown**, *India's focus on it may have strained its relations in the continental neighborhood.*

Impact of China's Rise on India's Regional Decline:

- *China's rise has led to* **India's comparative weakening in the region**, *despite India being more powerful than in the past.*
- *India faces* **stiff competition for influence in South Asia** *due to China's emergence as a superpower next door.*
- *China's rise suggests* **India may no longer be the most significan***t power in the region.*

Shift in Regional Balance of Power:

- **China's presence in South Asia**, *coupled with the US withdrawal and India's focus on the Indo-Pacific, has tilted the regional balance of power in Beijing's favor.*
- **South Asia's smaller powers** *are employing various strategies like balancing, bargaining, hedging, and bandwagoning, with some seeing China as a useful hedge against India.*

Challenges for India:

- *The growing obsolescence of* **South Asia as a geopolitical construct** *adds to India's diminishing influence in the region.*
- *India must acknowledge the* **changing regional dynamics** *and take proactive steps to address the challenge posed by China's rise.*

Strategies for India:

- *India should* **focus on its strengths** *rather than attempting to match China's might in every aspect.*
- **Modernizing its primacy in South Asia** *and reimagining engagement with the region is crucial.*
- **Leveraging maritime advantages** *in the Indo-Pacific to compensate for continental challenges is essential.*
- **Including smaller South Asian neighbors***in Indo-Pacific strategic discussions could help counter China's influence.*
- **India should embrace a non-centric lens** *for viewing the region and collaborate with external friendly partners to address common challenges.*

Utilizing Openness in New Delhi:

- *New Delhi's openness to viewing the region through a non-centric lens provides opportunities for collaboration with external partners to mitigate the impact of regional decline.*

Utilizing Soft Power:

- *New Delhi should creatively employ its soft power to maintain influence in the region.*
- *Encouraging informal contacts* **between political and civil society actors** *in India and other South Asian countries is one approach.*
- **Informal conflict management processes** *should be promoted, especially in situations where direct involvement by the Indian state is challenging, such as in Myanmar.*

Implications of the Dichotomy:

- *The contrast between* **India's global rise and regional decline** *has significant implications for its global aspirations.*
- *There's a legitimate concern about whether a country unable to maintain primacy in its surrounding regions can become a pivotal power in international politics.*

Practice Question

Q. Assess India's regional decline amidst global rise, analyzing implications for its international standing and proposing strategies to navigate challenges, considering China's ascendancy and changing regional dynamics. (15 marks, 250 words)

High Food Inflation in India

Syllabus: GS-3: Indian Economy – Inflation.

Context:

- *Global Food Price Trends (2023):World food prices witnessed a significant decline from 2022 highs.*
- *India experienced persistent high food inflation, peaking at 9.5% in December 2023, contrasting with global deflation of -10.1% during the same period.*

Factors Contributing to Global Food Price Drop:

- **Abundant supply of key crops**: *Bumper harvests in 2023, especially of wheat, resulted in a surplus in the global market, in contrast to concerns over supply disruptions in 2022.*
- **Improved supply from Russia and Ukraine:** *Despite disruptions, both nations maintained wheat exports, alleviating supply concerns.*
- **Lower demand for vegetable oils**: *Increased vegetable oil supplies and reduced use for biofuel production led to an approximately 32% drop in the UN's Vegetable Price Index.*
- **Slowing demand:** *High inflation and fears of economic recession reduced consumer demand, particularly in major food-importing regions, thereby decreasing import demand and lowering global prices.*

Factors Contributing to India's High Food Inflation:

- **Limited transmission of global prices**: *While global food prices decreased, India's prices remained elevated due to limited transmission of international prices to domestic markets, except for edible oils and pulses.*
- **Export bans and import duties**: *The Indian government-imposed bans on certain food exports and provided import duty waivers, reducing global market influences on domestic prices.*
- **Domestic production challenges:** *Weather conditions affecting crop yields, particularly for cereals, pulses, and sugar, contributed to supply shortages and higher prices domestically.*
- **Low stock levels**: *Low stock levels for commodities like wheat and sugar exacerbated price pressures.*

Measurement of Food Inflation in India:

- *Food inflation in India is* **primarily calculated using the Consumer Price Index** *(CPI) for Food and Beverages, a crucial metric monitoring price changes of a typical consumer basket.*
- *Food accounts for* **45.9% weightage in the CPI.**
- *However, its contribution to overall inflation surged from* **48% in April 2022 to 67% in November 2023.**

Government Household Consumption Survey Data:

- *Recent data from the* **government's Household Consumption Survey** *indicates a decline in food's share of the consumption basket.*
- *Food's share dropped below* **50% for rural consumers and 39% for urban consumers**.

Quarks hold the key to the final fate of some stars

Syllabus: GS-3; Science and Technology – Physics - Quarks.

Context:

- *Scientists have reported that the insides of most massive neutron stars is most likely made of an* **unusual state of matter called quark matter**.

Composition of Matter:

- *All matter is made of atoms.*
- *Atoms consist of protons, neutrons, and electrons.*

- *Protons and neutrons are located in the nucleus, while electrons orbit outside.*

Composite Nature of Protons and Neutrons:

- *Protons and neutrons are composite particles.*
- *They are made up of* **smaller particles called quarks**.

Quarks:

- *Quarks cannot exist in isolation; they exist in groups.*
- *Quarks are found in groups of two or three,* **forming clumps known as hadrons**.

Hadrons:

- *Hadrons are clumps of quarks.*
- *Common examples include* **protons and neutrons**.

Study Focus of Physicists:

- *Physicists study quarks primarily through the behavior of hadrons.*
- *They are interested in understanding* **how quarks clump together within hadrons**.

When quarks clump:

Three-Quark Clumps vs. Two-Quark Clumps:

- *Recent research (February 20) suggests that* **three-quark clumps are more likely to form** *than two-quark clumps under certain conditions.*
- *These finding challenges***traditional particle-physics models**, *which assumed quark consolidation is independent of the particle environment.*

Observation of Heavy-Quark Clumps:

- *Another study (March 15) observed clumps composed entirely of heavier quarks.*
- **Unlike protons and neutrons**, *which consist of lighter quarks and are long-lived, heavy-quark clumps are short-lived and require sophisticated tools and computing power for study.*
- **Understanding heavy-quark clumps is crucial** *for a comprehensive understanding of all quarks and their implications for nuclear fusion and stellar evolution.*

Impact on Quark Stars:

- *Understanding quarks, especially in the* **context of quark stars**, *could have significant implications.*
- *Quark stars,* **a theoretical type of compact star** *composed primarily of quarks, could provide insights into the behavior of quarks and their role in astrophysics.*

The tension of every star

Balance of Forces in a Star:

- *A star maintains equilibrium between two opposing forces:* **gravity and nuclear fusion.**
- *Gravity, stemming from the star's mass,* **tends to collapse the star inward**.
- *Nuclear fusion, generating energy through fusion reactions at the star's core,* **counteracts gravity by pushing the star outward**.
- *This equilibrium allows the star to shine in the sky.*

Evolution of Stars:

- *As a star consumes its fuel and* **exhausts its ability to sustain nuclear fusion**, *gravity becomes dominant.*
- *Eventually, the star exhausts its nuclear fuel and* **undergoes gravitational collapse,** *leading to its demise.*

Outcome of Stellar Death:

- *The fate of a star post-collapse depends on its initial mass.*
- *Different outcomes include forming a* **white dwarf, a neutron star, or a black hole**.

Relationship Between Mass and Outcome:

- *Scientists have determined that a star's final fate correlates with its mass.*
- *For example,* **if the Sun were 20 times more massive**, *it might collapse into a black hole upon death, while at eight times its mass, it could become a neutron star.*

Quark Stars:

- *There's speculation about the* **existence of stars that are too heavy to** *become neutron stars but not heavy enough to form black holes.*
- *These stars might undergo a* **unique transformation into quark stars**, *composed primarily of quarks.*
- *The possibility of such stars challenges current understanding and invites further investigation into the nature of stellar evolution and the behavior of extreme astrophysical phenomena.*

Enter 'quark matter'

Neutron Stars:

- *Neutron stars form* **when the core of a massive star collapses**, *fusing protons and electrons into neutrons* **due to gravitational forces**.

- *Understanding neutron stars is challenging because direct experiments on them are impossible on Earth, and their masses and radii in the universe are mostly unknown.*

Dense Matter and Pressure:

- *The* **matter inside neutron stars is incredibly dense**, *with the mass of two Suns packed into a sphere just 25 km wide.*
- *This* **density creates immense pressure**, *potentially leading to the formation of new states of matter.*

Quark Matter Hypothesis:

- *A longstanding question in physics asks if the extreme pressure in neutron stars could lead to the formation of quark matter,* **where only quarks exist without neutrons.**

Research Findings:

- *In December 2023, researchers from the University of Helsinki reported in* **Nature Communications that the interiors** *of most massive neutron stars likely consist of quark matter with an 80-90% probability.*
- *The research combined* **astrophysical observations** *with theoretical calculations performed from scratch using a supercomputer.*

Reliability of Findings:

- *The reliability of the result is limited due to the small number of astrophysical observations used.*
- *More observational data is needed to further understand quark matter and its formation within neutron stars.*

The need for quarks

Equation of State:

- *To calculate the properties of materials,* **scientists often use an equation of state**, *which relates various physical properties of the material.*
- *For neutron stars, the* **Tolman-Oppenheimer-Volkoff equation** *is commonly used, although it's highly complex.*
- *This equation provides insights into the* **likelihood of quark presence** *within neutron stars.*

Quirky Naming Tradition in Physics:

- *Physicists often give whimsical names to discovered phenomena.*
- *Quarks, for example, come in six "flavors," with three known as charm and strange.*
- *Quarks also possess a* **property known as color charge**.

- *The term "quark" was coined by* **physicist Murray Gell-Mann**, *inspired by James Joyce's "*Finnegan's Wake."

Discovery of Quarks:

- *In the 1960s,* **physicists observed that neutrons**, *despite being electrically neutral, possess a magnetic moment (a property associated with charged particles).*
- *This led to the hypothesis that* **neutrons must be composed of smaller particles**, *later named quarks by Gell-Mann.*
- *The existence of quarks was confirmed through experiments in the 1970s.*

Setting quarks free

Types of Quarks and Antiquarks:

- *There are six types of quarks:* **up, down, top, bottom, strange, and charm**.
- *Each quark can have one of three color charges.*
- *Antiquarks are the antimatter counterparts of quarks.*

Formation of Mesons and Baryons:

- **Quark-antiquark clumps form mesons**, *while three-quark clumps form baryons, which make up normal matter.*
- **Mesons and baryons do not annihilate** *each other because they consist of different types of quarks (e.g., up + anti-down).*

Binding of Quarks:

- **Quarks are bound together by gluons**, *another set of particles.*
- *Due to strong nuclear forces, quarks remain tightly bound and are never found free, even in empty space.*

Quantum Chromodynamics (QCD):

- *QCD is the theory explaining the* **nuclear force holding quarks together**.
- *At extremely high energies, nuclear matter can transition to a new phase where quarks are not confined to clumps.*

Deconfinement and Quark-Gluon Plasma:

- *Experiments, like those conducted at the* **Large Hadron Collider** *by smashing lead ions, provide evidence of deconfinement.*
- *At such energies,* **a state of matter called quark-gluon plasma briefly exists**, *where quarks are independent.*

Implications for the Universe and Quark Stars:

- *According to the Big Bang theory, the early universe was filled with* **quark-gluon plasma before particles clumped to form matter.**
- *The clumping process might release energy or modify the surroundings, which astrophysicists can search for to potentially discover quark stars.*

Ongoing Research and Open Problems:

- *The possibility of quark stars remains an open problem in physics, awaiting further evidence or discovery.*

Chang'e-6 mission

Syllabus: GS-3: Science and Technology – Space.

Context:

- *China launches lunar probe mission to collect samples for first time from far side of moon.*

More about the Mission:

- **Mission Name:** *Chang'e 6*
- **Mission Type:** *Robotic lunar exploration*
- **Agency:** *Conducted by the China National Space Administration (CNSA)*
- **Objective:** *To obtain a sample of soil and rock from the far side of the Moon*
- **Status:** *China's second sample return mission*
- **Namesake:** *Named after the Chinese Moon goddess Chang'e*
- **Launch Date:** *May 3, 2024*
- **Expected Duration***: Approximately 53 days*

Phases of the Chinese Lunar Exploration Program:

- **Phase 1: Reach lunar orbit.**
  - *Chang'e 1 (2007) and Chang'e 2 (2010) achieved this.*
- **Phase 2: Land and rove on the Moon.**
  - *Chang'e 3 (2013) and Chang'e 4 (2019) accomplished this.*
- **Phase 3: Collect lunar samples and send them to Earth.**
  - *Chang'e 5 (2020) completed this, and Chang'e 6 is planned for this phase.*
- **Phase 4: Develop a robotic research station near the Moon's south pole.**

- *Aiming for crewed lunar landings in the 2030s and possibly a crewed outpost near the lunar south pole.*

Chang'e 6 Mission Objectives:

- *Land and return material from the southern hemisphere of the lunar far side.*
- **Target area:** *Southern portion of the Apollo crater within the* **South Pole-Aitkin (SPA) impact basin.**
- *Hope to collect lunar mantle material ejected by the original impact creating the SPA basin.*

Mission Details:

- *Lander designed to collect up to 2 kilograms (4.4 lb) of lunar far-side material.*
- **Collection methods:** *Surface soil and rocks using a scoop, subsurface samples using a drill.*

Significance:

- *If successful, China will be the first nation to land, collect, and deliver samples back to Earth from the far side of the Moon.*

International Payloads:

- **French Instrument (DORN):**
  - *Purpose: Study the transport of lunar dust and other volatiles between the lunar regolith and the lunar exosphere, including the water cycle.*
- **Italian Instrument (INRRI):**
  - *Purpose: Consists of a passive laser retro-reflector for laser range-finding of the lander, similar to those used on the Schiaparelli and InSight missions.*
- **Swedish Instrument (NILS):**
  - *Purpose: Detect and measure negative ions reflected by the lunar surface.*
- **Pakistani Payload (ICUBE-Q CubeSat Orbiter):**
  - *Developed by the Institute of Space Technology.*
  - *Purpose: Carry two optical cameras to image the lunar surface and obtain lunar magnetic field data.*