

Prelim Bits 01-06-2022 | UPSC Daily Current Affairs

UN Peacekeeping Missions

Under the UN Organisation Stabilisation Mission in the Democratic Republic of the Congo (MONUSCO), the Blue Helmets peacekeepers have thwarted an attack by an armed group in the Congo.

MONUSCO

- The UN Organisation Stabilisation Mission in the Democratic Republic of the Congo (MONUSCO) took over from a previous UN peacekeeping mission in 2010.
- MONUSCO aims to protect civilians, humanitarian personnel and human rights defenders from the imminent threat of physical violence.
- It also aims to support the government of the country in its stabilisation and peace consolidation efforts.

UN Peacekeeping Mission

- This mission is a joint effort between the UN Department of Peace Operations and the Department of Operational Support.
- It aims to assist host countries to transition from situations of conflict to peace.
- The UN began its Peacekeeping efforts in 1948 when it deployed military observers to West Asia.
- The UN Peacekeepers provide security as well as political and peace-building support to conflict-ridden countries.
- The three basic principles that guide U.N.'s Peacekeeping missions are:
 1. Consent of the parties,
 2. Impartiality, and
 3. Non-use of force except in self-defence & defence of the mandate.

India has been among the largest troop-contributing countries to the UN peacekeeping missions.

In 2007, India became the first country to deploy an all-women contingent to a UN Peacekeeping mission.

Blue Helmets

- They are the UN military personnel that work alongside the UN Police and civilian colleagues to promote stability, security and peace processes.
- The personnel get the name from the iconic blue helmets they wear.
- All military personnel under Blue Helmets are members of their national armies first who are seconded to work under the UN command.
- African and Asian countries outnumber their western counterparts in contributing soldiers to

Blue Helmets.

- **Enlistment** - The UN Office of Military Affairs recruits highly qualified military officers from the UN member states for service in the UN peace missions around the world.
- The military officers are to serve as individual Staff Officers, Military Observers, or as part of a formed unit from a Troop-Contributing Country.
- Staff officers are also deployed at the UN headquarters from where they monitor all aspects related to deployment of troops on the ground.
- Blue Helmets are seconded to work under the UN flag for periods normally of up to 1 year in the field, or 2 or 3 years at the headquarters.

Reference

1. <https://www.thehindu.com/news/international/explained-what-is-the-un-peacekeeping-mission/article65468170.ece?homepage=true>
2. <https://peacekeeping.un.org/en/military>

ASTRA Mark-I

Ministry of Defence signed a contract with Bharat Dynamics Limited (BDL) for supply of ASTRA MK-I Missile for the Indian Air Force (IAF) & Indian Navy under the Buy (Indian-IDD) category of defence acquisition.

- ASTRA MK-I is a Beyond Visual Range (BVR) Air to Air Missile (AAM).
- It is indigenously designed and developed by the Defence Research and Development Organisation (DRDO) in coordination with the IAF.
- BVM missiles are capable of engaging beyond the range of 37 kms.
- AAMs are fired from an airborne asset to destroy an airborne target.
- It can travel at speeds more than 4 times that of sound and can reach a maximum altitude of 20 km, making it extremely flexible for air combat.
- The IAF will fully integrate the missile on the Su 30 MK-I fighter aircraft & will be integrated with other fighter aircraft in a phased manner, including the Light Combat Aircraft (Tejas).
- The Indian Navy will integrate the missile on the MiG 29K fighter aircraft which are deployed on the Navy's aircraft carriers.

Reference

1. <https://pib.gov.in/PressReleasePage.aspx?PRID=1829750>
2. <https://indianexpress.com/article/explained/explained-astra-mk-1-air-to-air-missile-features-strategic-significance-7946070/>

Symmetrons and Fifth Force

The scientists have proposed 'invisible barriers' in space to explain 'planes of satellite galaxies' around the Milky Way and surrounding galaxies.

- **Lambda-CDM model** posits that smaller galaxies orbiting larger ones should be distributed randomly in a haphazard manner around the larger ones.
- But, scientists observe that these smaller galaxies are often arranged in **flat planes** around the larger ones, similar to the rings of the Saturn.
- These observations are in contravention of the standard model, which has prompted the researchers to propose a new model.

- In this new model, the scientists have proposed that there are '**invisible barriers**' or 'invisible walls' in space, which likely led to the creation of these planes.
- They propose that these barriers are created by a 'fifth force' that is a result of a new kind of particle called a symmetron.
- **Symmetrons and fifth force** - Currently, the concept of symmetrons and the fifth force is purely theoretical.
- The 'symmetron' is proposed as a field that permeates the Universe and gives rise to a new fifth force.
- It is also a candidate for the explanation of dark energy and an explanation for why the universe is accelerating.
- It is named the symmetron field because it has symmetry in regions of high density.
- But in regions of low density, this symmetry is broken and a fifth force is mediated.
- This could explain how these 'planes of satellites' remain stable within their disks since the symmetron field would still be symmetric, creating no net force.
- But as soon as these satellites move outside of the disk, a symmetron force could be exerted on them, bringing them back to the disk.

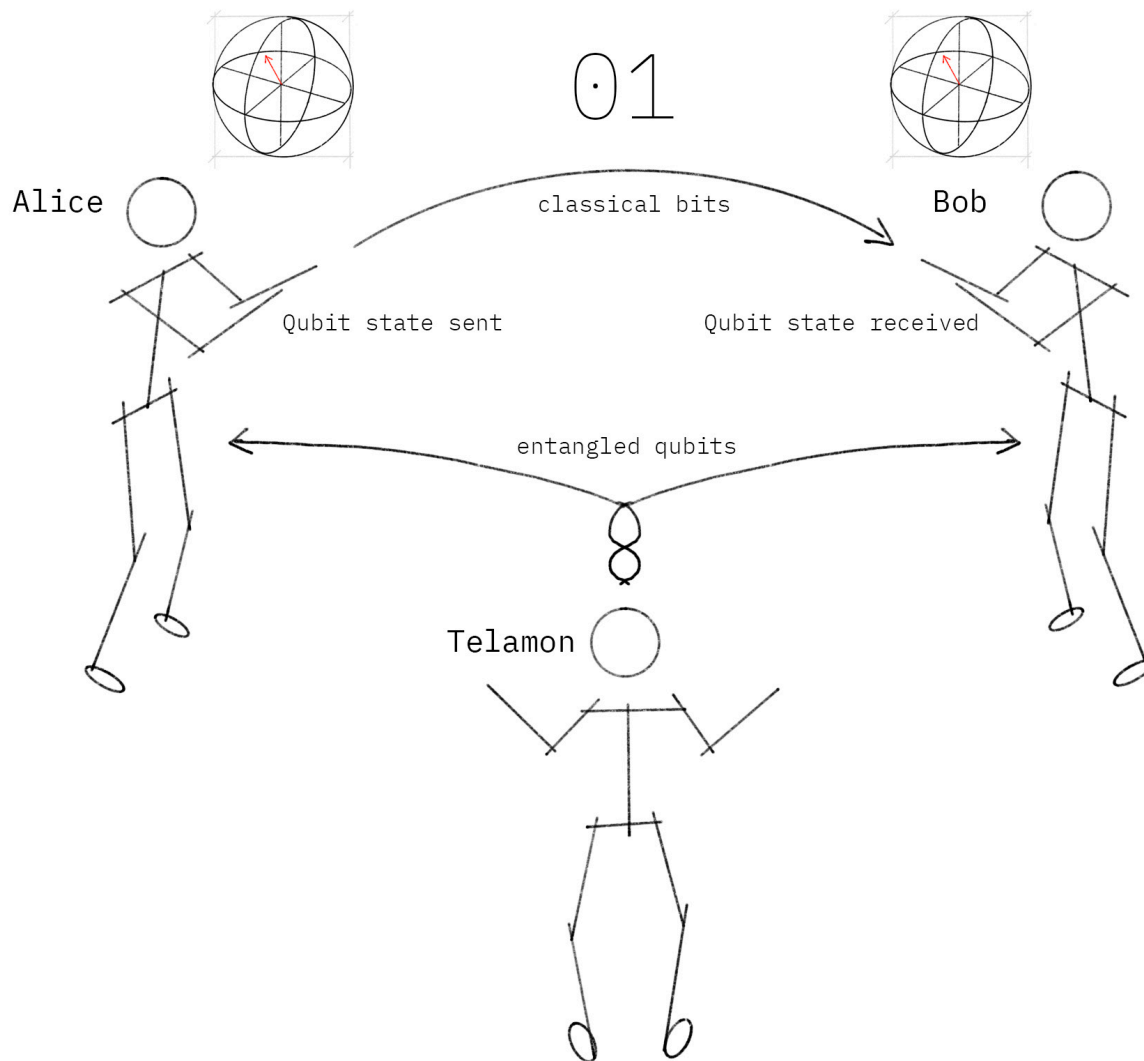
Reference

<https://indianexpress.com/article/technology/science/scientists-propose-invisible-barriers-in-space-to-explain-planes-of-satellite-galaxies-7919360/lite/>

Quantum Teleportation

Researchers have teleported quantum bits across a rudimentary network, which was done by greatly improving the quantum memory and enhancing the quality of quantum links between the three nodes of the network.

- Teleportation offers a better way of sending quantum information, instead by means of sharing through glass fibre cables or light particles.
- In quantum teleportation, the quantum bit disappears on the side of the sender and appears on the side of the receiver.
- As the quantum bit does not need to travel across the intervening space, there is no chance that it will be lost. This makes quantum teleportation a crucial technique for a future quantum Internet.
- In order to be able to teleport quantum bits, several ingredients are required,
 1. A quantum entangled link between the sender and receiver,
 2. A reliable method for reading out quantum processors, and
 3. The capacity to temporarily store quantum bits.



- **Three steps** - The teleportation consists of three steps.
- First, the 'teleporter' has to be prepared by entangling two nodes indirectly through a third-party node.
- The second step is creating the 'message' (quantum bit) to be teleported. This can be '1' or '0' or various other intermediate quantum values.
- The third step is the actual teleportation between the two entangled nodes.
- For that purpose, one node carries out a joint measurement with the message on his quantum processor on its half of the entangled state.
- What then happens is something that is possible only in the quantum world: as a result of this measurement, the information disappears on one side and immediately appears on other side.
- In fact, the quantum bit has been encrypted upon transfer; the key is determined by the first node's measurement result.
- So first node sends the measurement result to other entangled node, after which it carries out the relevant quantum operation for decrypting the quantum bit. This results in teleportation of quantum bits.

Reference

1. <https://www.sciencedaily.com/releases/2022/05/220525131156.htm>
2. <https://qiskit.org/textbook/ch-algorithms/teleportation.html>

Fiscal Deficit Improved

The Controller General of Accounts (CGA) said that the fiscal deficit has improved to 6.71% of the FY22 GDP over the revised budget estimate of 6.9% mainly on account of higher tax realisation.

- In February 2022, the Finance Ministry had estimated the deficit at 6.9% of the GDP.
- Total expenditure too was higher at Rs. 37.94 lakh crore against the Revised Estimates of Rs. 37.7 lakh crore presented to the Parliament.
- The CGA further said the revenue deficit at the end of the fiscal was 4.37% for fiscal year 2021-22.
- The CGA said the fiscal deficit during the first month of FY23 was 4.5% of the Budget Estimate for the current fiscal.
- The deficit was 5.2% a year earlier.
- In April 2022, there was a revenue surplus of Rs. 591 crore. Government meets its fiscal deficit from market borrowings.
- Revenue collections were about Rs. 27 lakh crore, almost Rs. 5 lakh crore above the budget estimates.
- The spurt in tax revenues, especially GST collection, was mainly a result of DGARM, which is the Data Analytics wing of the GST Council.
- **Risks to FY23 target** - On the outlook for FY23, there were several risks to the fiscal deficit target of Rs. 16.6 lakh crore, emanating from the
 1. Revenue loss to the Centre on account of the excise duty cut,
 2. Lower-than-budgeted transfer of the RBI's surplus, and
 3. The need for additional spending on food, fertilizer and LPG subsidies through the year.

Reference

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2. https://www.business-standard.com/article/economy-policy/centre-s-fy22-fiscal-deficit-at-6-7-vs-revised-estimates-of-6-9-122060100038_1.html