



## Daily Current Affairs Prelims Quiz 08-01-2022 - (Online Prelims Test)

1) Consider the following statements regarding Binary Stars:

1. Double Stars are stars that appear close together in the sky visually but are not necessarily near one another in space.
2. Our Sun is a Binary star and it sports both heartbeats as well as pulsations.

Which of the above statement(s) is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

Answer : a

A star with a heartbeat & without a magnetic field discovered.

### Binary Stars

- More than four-fifths of the single points of light we observe in the night sky are actually two or more stars orbiting together.
- The most common of the multiple star systems are binary stars, systems of only two stars together.
- These pairs come in an array of configurations that help scientists to classify stars, and could have impacts on the development of life.
- Binary stars are two stars orbiting a common center of mass.
- The brighter star is officially classified as the primary star, while the dimmer of the two is the secondary (classified as A and B respectively).
- In cases where the stars are of equal brightness, the designation given by the discoverer is respected.
- Our Sun is a solitary star.

### Classification

#### Wide Binaries

- Wide binaries are stars that have orbits that keep them spread apart from one another.
- These stars evolve separately, with very little impact from their companions.
- They may have once contained a third star, which booted the distant companion outward while eventually having been ejected themselves.

#### Close Binaries

- They evolve nearby, able to transfer their mass from one to the other.
- The primaries of some close binaries consume the material from their companion, sometimes exerting a gravitational force strong enough to pull the smaller star in completely.

## Visual Binaries

- Two stars with a wide enough separation that both can be viewed through a telescope, or even with a pair of binoculars.

2) The term e-DNA, recently in news, corresponds to which of the following statements?

- e-DNA is associated with the DNA samples collected and recorded in an online portal for future investigations.
- The DNA that is present outside the genome spacing is extra and is known as e-DNA.
- The airborne DNAs of animals that are shed through their breath, saliva, fur into the environment is called the e-DNA.
- The DNA which contains the Epinephrine hormone in excess is known as e-DNA.

Answer : c

Two independent studies have found that the DNA floating in the air can boost biodiversity conservation efforts across the world.

## e-DNA Technique

- Animals shed DNA through their breath, saliva, fur or faeces into the environment. These DNAs floating in the air.
- These airborne DNAs are called environmental DNA (e-DNA).
- Tracking animals through e-DNA isn't a new idea. Biologists have observed aquatic organisms by sequencing e-DNA from water samples.
- Similarly, the two teams filtered e-DNA from the air by using sensitive filters attached to vacuum pumps.
- After extracting DNA from the air, the teams made copies using polymerase chain reaction (PCR). The last step was DNA sequencing.
- They then compared the sequencing results with known sequences to identify the animal.
- These e-DNAs can be used to potentially identify and monitor terrestrial animals.
- Their findings could help understand the composition of animal communities and detect the spread of non-native species.
- But in its current form, the e-DNA technique cannot provide accurate data for population census. But it will in the future.

3) Consider the following statements:

1. National Commission for Backward Classes (NCBC) is a statutory body set up under the National Commission for backward classes act, 1993.
2. The NCBC is empowered to look into the grievances of persons of Other Backward Classes and those belonging to Scheduled Castes.
3. The 1st backward class commission and 2nd backward class commission were under the leadership of Mandal and Kalelkar respectively.

Which of the above statement(s) is/are **incorrect**?

- 1 and 3 only
- 2 only
- 2 and 3 only
- 1, 2 and 3

Answer : d

Supreme Court upholds constitutional validity of 27% OBC quota.

### **National Commission for Backward Classes (NCBC)**

- The 102nd Constitutional Amendment Act, 2018 provides constitutional status to the National Commission for Backward Classes.
- It has the authority to examine complaints and welfare measures regarding socially and educationally backward classes.
- The 1st Backward Class Commission was set up under the chairmanship of Kaka Kalelkar in 1953.
- The 2nd Backward Class Commission was set up under the chairmanship of Bindeshwari Prasad Mandal in 1979.
- The National Commission for Backward Classes is vested with the responsibility of considering inclusions in and exclusions from the lists of communities notified as backward for the purpose of job reservations.
- The commission tenders the needful advice to the Central Government on the issues related to the backward classes and the commission has the powers of a civil court.

### **NCBC Structure**

- The Commission consists of five members including a Chairperson, Vice-Chairperson and three other Members appointed by the President by warrant under his hand and seal.
- The conditions of service and tenure of office of the Chairperson, Vice-Chairperson and other Members is determined by President.

4) Consider the following statements regarding the Nuclear Non-Proliferation Treaty (NPT):

1. The NPT mandates complete ban on nuclear weapons and nuclear technology on member nations.
2. This treaty is a legally-binding instrument on member nations for nuclear disarmament.
3. India is a member of the NPT and only North Korea and Pakistan are non-member nations.

Which of the above statement(s) is/are correct?

- a. 1 and 3 only
- b. 2 only
- c. 3 only
- d. 1, 2 and 3

Answer : b

### **Nuclear Non-Proliferation Treaty**

- The NPT is a landmark international treaty whose objective is to prevent the spread of nuclear weapons and weapons technology, to promote cooperation in the peaceful uses of nuclear energy and to further the goal of achieving nuclear disarmament and general and complete disarmament.
- The Treaty represents the only binding commitment in a multilateral treaty to the goal of disarmament by the nuclear-weapon States.
- Opened for signature in 1968, the Treaty entered into force in 1970. On 11 May 1995, the Treaty was extended indefinitely.
- A total of 191 States have joined the Treaty, including the five nuclear-weapon States.
- Treaty proposes no tangible disarmament roadmap, no reference to test ban or to the freezing of production of either fissile materials or nuclear weapons, and omitted provisions for reductions and elimination.

## India's Stand on NPT

- India is one of the only five countries that either did not sign the NPT or signed but withdrew, thus becoming part of a list that includes Pakistan, Israel, North Korea, and South Sudan.
- India always considered the NPT as discriminatory and had refused to sign it.
- India has opposed the international treaties aimed at non-proliferation since they were selectively applicable to the non-nuclear powers and legitimized the monopoly of the five nuclear weapons powers.

5) Consider the following statements regarding Plate Tectonics:

1. In plate tectonics, Earth's lithosphere is made up of the crust and upper mantle is broken into large rocky plates.
2. These plates lie on top of a partially molten layer of rock called the asthenosphere.
3. The most dynamic sites of tectonic activity are seafloor spreading and giant rift valleys.

Which of the above statement(s) is/are correct?

- a. 1 and 2 only
- b. 3 only
- c. 1 only
- d. 1, 2 and 3

Answer : d

India, Somalia and Madagascar may become one continent in 200 million years. The collision will lead to the 'formation of a long mountain range along the modern west coast of India' which the team named 'Somalaya'.

## Plate Tectonics Theory

- Continents rest on massive slabs of rock called tectonic plates.
- The plates are always moving and interacting in a process called plate tectonics.
- Some of the most dynamic sites of tectonic activity are seafloor spreading zones and giant rift valleys.
- In the process of seafloor spreading, molten rock rises from within the Earth and adds new seafloor (oceanic crust) to the edges of the old.
- Seafloor spreading is most dynamic along giant underwater mountain ranges known as mid-ocean ridges.
- As the seafloor grows wider, the continents on opposite sides of the ridge move away from each other.
- The North American and Eurasian tectonic plates, for example, are separated by the Mid-Atlantic Ridge.
- The two continents are moving away from each other at the rate of about 2.5 centimeters (1 inch) per year.
- Rift valleys are sites where a continental landmass is ripping itself apart. Africa, for example, will eventually split along the Great Rift Valley system.
- What is now a single continent will emerge as two—one on the African plate and the other on the smaller Somali plate.
- The new Somali continent will be mostly oceanic, with the Horn of Africa and Madagascar its largest landmasses.
- In plate tectonics, Earth's outermost layer, or lithosphere—made up of the crust and upper mantle—is broken into large rocky plates.
- These plates lie on top of a partially molten layer of rock called the asthenosphere.
- Due to the convection of the asthenosphere and lithosphere, the plates move relative to each

other at different rates, from two to 15 centimeters (one to six inches) per year.

- This interaction of tectonic plates is responsible for many different geological formations such as the Himalaya mountain range in Asia, the East African Rift, and the San Andreas Fault in California, United States.



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