Daily Current Affairs Prelims Quiz 03-01-2022 - (Online Prelims Test)

1) Consider the following statements:

1. DNA present outside our genes in the genomic space, which does not encode the proteins is called the Dark Genome.
2. Dark Genomes have evolved portions of coding proteins which can be used to distinguish between schizophrenia and bipolar disorders.

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 : c

Dark Genome

- The human genome is conventionally divided into the “coding” genome, which generates the ~20,000 annotated human protein coding genes, and the “dark” genome, which does not encode proteins.
- The dark genome is a vast space, accounting for the ~98.5% of genomic space where repeat elements, enhancers, regulatory sequences, and non-coding RNAs reside.
- Researchers investigating the “dark genome” report that they have discovered recently evolved regions that code for proteins associated with schizophrenia and bipolar disorder.
- They say these new proteins can be used as biological indicators to distinguish between the two conditions, and to identify patients more prone to psychosis or suicide.
- Hotspots in the dark genome associated with the disorders may have evolved because they have beneficial functions in human development, but their disruption by environmental factors leads to susceptibility to, or development of, schizophrenia or bipolar disorder.
- The researchers think that these genomic components of schizophrenia and bipolar disorder are specific to humans—the newly discovered regions are not found in the genomes of other vertebrates.

2) Consider the following statements regarding Carbon Enhanced Metal-Poor (CEMP) Stars:

1. These stars were formed from the ejected material of the first stars that formed after the Big Bang.
2. These types of stars in their evolutionary stages can produce elements heavier than iron.

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

Carbon Enhanced Metal Poor (CEMP) Stars

- Metal-poor stars technically called Carbon Enhanced Metal Poor (CEMP) stars show enhancement of carbon.
- These were formed from the ejected material of the first stars that formed after the Big Bang, carrying the chemical imprints of early Galactic chemical evolution.
- Probing into the formation of these metal-poor stars that exhibit enhancement in carbon as well as the specified heavy elements can help trace the origin and evolution of the elements in the Universe.
- CEMP stars are characterized by diverse heavy elements abundance patterns and are primarily classified into four groups, based on which groups of heavy elements are more abundant.
- These are mostly dwarf stars, sub-giant stars, or giant stars, and stars that belong to these evolutionary stages cannot produce elements heavier than iron.
- Scientists earlier found that heavier elements are produced mainly by two processes of nucleosynthesis– slow and rapid neutron-capture processes called s and r processes respectively.
- The CEMP stars showing enhancements of s-process and r-process elements are known as CEMP-s and CEMP-r stars respectively.
- Another subclass of CEMP stars, known as CEMP-r/s stars exhibit enhancement of both s- and r-process elements, the production process of which had remained a puzzle.
- A group of scientists from the Indian Institute of Astrophysics (IIA) have found that an intermediate process which they called i-process operating at neutron densities intermediate between those for s-process and r-process is responsible for the peculiar abundance pattern of CEMP-r/s stars.
- They have also put forward a new stellar classification criteria based on the abundances of barium, lanthanum and europium to distinguish between the CEMP-s and CEMP-r/s stars.
- The team analyzed high quality, high resolution spectra of five CEMP stars acquired using 2-m Himalayan Chandra Telescope (HCT) at the Indian Astronomical Observatory, 1.52-m Telescope at the European Southern Observatory at La Silla, Chile, and the 8.2-m SUBARU Telescope at the summit of Mauna Kea, Hawaii.

3) Consider the following statements regarding Solar Panels:

1. Solar panels placed in the hot sun are less efficient in producing electricity than those in cold climates.
2. Solar panels need only light to produce electricity; heat reduces their efficiency.
3. In India, the best place to put up a solar plant is the cold Ladakh region, where there is plenty of light and practically no heat.

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

a. 1 and 3 only

b. 2 only

c. 1 only

d. None of the above

Answer : d

Hong Kong researchers find a way to cool solar panels, step up electricity output.

Solar Panels

- Solar panels placed in the hot sun are less efficient in producing electricity than those in cold climates.
- Solar panels need only light to produce electricity; heat reduces their efficiency.
- Therefore, in India, the best place to put up a solar plant is the cold Ladakh region, where there is plenty of light and practically no heat.

Solution by the Hong Kong Scientists

- The scientists smeared a gel over the panels.
- The technology lies in the gel, which is a cocktail of carbon nanotubes, polymers and calcium chloride.
- This material sucks in water vapour from the air during the cool nights, when humidity is high.
- When the sun shines the following day, the gel releases the water in the form of droplets, which quickly evaporate — leaving the gel ready for another round of work in the night.
- The evaporation cools the panels. The scientists have found that the cooling effect is better when it is windy.

4) The T.K Viswanathan Committee was constituted for which of the following reasons?

a. To address the concerns of North East People living in various parts of India.

b. To propose new laws and amendments to deal with hate speech on the internet.

c. The panel set up to examine sustainable economy measures in textile industry.

d. To examine the changes to be brought about in J&K proposed by the delimitation commission.

Answer : b

T.K. Viswanathan Committee

- The committee, headed by TK Viswanathan, submitted a report to the Home Ministry.
- It was formed after the Supreme Court struck down section 66A of the Information Technology Act.
- Section 66 defines the punishment for sending ‘offensive’ messages through a computer or any other communication device like a mobile phone.
- A conviction can fetch a maximum of three years in jail and a fine.

Recommendations by the Committee

- It has recommended appointment of cybercrime coordinators in every state as well as setting up of cybercrime cells in each district.
- They will deal with those fomenting trouble or spreading hate against anybody on the grounds of religion, race, caste or community, sex, gender identity, sexual orientation, place of birth or residence, language, disability or tribe through means of communication.
- It suggested that the state cybercrime coordinator should be an officer not below the rank of Inspector General of Police.
- It also suggested that the district cybercrime cell should be headed by an officer not below the rank of sub-inspector of police.

5) Consider the following statements regarding the IPO rules given by SEBI:

1. The price brand of an IPO should be in such a way that the ceiling price is at least 105% of the floor price.
2. Companies will not be allowed to use more than 50% of the money that they collect through IPOs.
3. Anchor investors will not be able to sell more than half their shares before 50days from the date of the IPO, against the current time period of 30days.

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

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

Answer : d

New IPO regulations given by SEBI

- According to the new SEBI rules, the price band of an IPO should be set in such a way that the ceiling price is at least 105% of the floor price.
- Secondly, companies will not be allowed to use more than 35% of the money that they collect through IPOs to fund the purchase of other businesses, unless they offer sufficient details.
- Thirdly, promoters with a stake of over 20% in a company cannot sell more than half of their stake in an IPO.
- And lastly, anchor investors will not be able to sell more than half their shares before 90 days from the date of the IPO, against the current time stipulation of 30 days.