

Q: Consider the following statement regarding Dark Matter:

1. Only 5 percent of the universe in visible rest are dark matter.
2. LUX-ZEPLIN is a dark matter detector experiment.
3. Dark matter is made up of charged particles.

Choose the correct option from the codes given below:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Ans: a

Explanation:

- Many physicists strongly believe that the entire visible part of the universe forms only 5% of all matter in it. They believe the rest is made up of dark matter and dark energy.
- The latest to hit the news in the field of dark matter is a dark matter detector experiment named LUX-ZEPLIN (LZ) in South Dakota in the U.S.
- Dark matter is made up of particles that do not have a charge, which means they do not interact through electromagnetic interactions. So, these are particles that are “dark”, namely because they do not emit light, which is an electromagnetic phenomenon, and “matter” because they possess mass like normal matter and hence interact through gravity.

Q: Consider the following statement:

1. India has submitted a proposal to the United Nation Convention on International Trade in Endangered Species for addition of Amboina box turtle species to Appendix I from current Appendix II.
2. Batagur Kachuga is protected under Schedule I of the Indian Wildlife (Protection) Act of 1972.
3. Batagur Kachuga is currently part of Appendix II of CITES.

Choose the correct option from the codes given below:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Ans: b

Explanation:

- Recently, India has submitted a proposal to the United Nation Convention on International Trade in Endangered Species on Wild Fauna and Flora for addition of Batagur Kachuga species to Appendix I from current Appendix II.
- With illegal global pet trade, habitat loss and hydrological projects threatening the existence of already endangered Red-crowned Roofed Turtle (Batagur Kachuga) found in Ganga lowlands and Bangladesh.
- Batagur Kachuga is protected under Schedule I of the Indian Wildlife (Protection) Act of 1972(amended), according to which endangered species that may only be hunted under exceptional circumstances, under license from both federal and provincial authorities.
- Batagur Kachuga is currently part of Appendix II of CITES that has species not necessarily threatened with extinction, but in which trade must be controlled to avoid utilisation incompatible with their survival.

Q: Consider the following statement regarding the fundamental basis for AI and OODA loop:

1. AI can drastically reduce the OODA loop.
2. AI is also being deliberated across the C4I (Command, Control, Communication, Computers and Intelligence) management system.

Choose the correct option from the codes given below:

- a) 1 Only
- b) 2 Only

- c) 1 and 2
- d) None of the above

Ans: c

Explanation:

- In a well chronicled dogfights where American fighter aircraft F-86 won against the Russian MiG-15, the victories were based on the fact that American pilots had a much shorter OODA loop in the observing and acting phase of combat operation.
- The F-86 had the much wider field of vision and easier hydraulic controls that allowed them to outrun the OODA loops of Russian pilots.
- So, the role of AI is about processing such information which is difficult to achieve in shorter time-frame. AI can drastically reduce the OODA loop. This is one of such applications.
- Further, AI is also being deliberated across the C4I (Command, Control, Communication, Computers and Intelligence) management system.

Q: Which among the following country will admitted to Shanghai Cooperation Organisation (SCO) in 2022 as an observer state:

- a) Bangladesh
- b) Indonesia
- c) UAE
- d) Iran

Ans: d

Explanation:

- Iran will be admitted to the Shanghai Cooperation Organisation (SCO) in 2022, with a memorandum on the country's obligations to be signed at a summit in Samarkand in September.
- In 2022, within Uzbekistan's chairmanship, Iran will be admitted to the SCO **as an observer state**.
- The SCO was founded in Shanghai in 2001 by the leaders of Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Russia and China.

Q: Consider the following statement:

1. Leonidas is a technology that can disable a hostile drone while leaving a friendly drone a few feet distant unharmed.
2. Leonidas uses direct energy to precise frequencies which can take out both large fixed-wing drones and small quadcopters.

Choose the correct option from the codes given below:

- a) 1 Only
- b) 2 Only
- c) 1 and 2
- d) None of the above

Ans: c

Explanation:

- In a recent development, a US Start-up Epirus has developed Leonidas, a technology that can disable a hostile drone while leaving a friendly drone a few feet distant unharmed.
- Using super-dense Gallium Nitride power amplifiers and based on the AI algorithms, Leonidas uses direct energy to precise frequencies which can take out both large fixed-wing drones and small quadcopters.