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DAY: 48 QUESTIONS with ANSWER HINTS



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QUESTIONS

1. onsider the following statements:

- Traditional Surrogacy is the process where egg used is of a surrogate mother, thus she becomes the biological mother of a child.
- 2. In Gestational Surrogacy surrogate mother's eggs are not used.
- 3. Altruistic Surrogacy includes surrogacy in which payment exceeding basic medical expenses and insurance covers are paid.

Which of the above statements are correct?

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

2. Consider the following statements regarding bio fortification:

- 1. Bio fortification is the process of increasing nutritional value of food crops by increasing the density of vitamins and minerals in a crop through either conventional plant breeding; agronomic practices or biotechnology.
- 2. Madhuban Gajar is a bio-fortified crop which contains high α -carotene and zinc content.

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

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

3. With reference to Kala Azar consider the following statements:

- 1. Kala-azar is also known as visceral leishmaniasis (VL).
- 2. It is spread to humans through bites from female Aedesaegypti mosquito.

Which of the above statement(s) are correct?

- (a) 1 only
- (b) 2 only
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- (c) Both 1 and 2
- (d) Neither 1 nor 2
- 4. Consider the following statements regarding "Raider-X" which was seen recently in news:
 - 1. It is a bomb detection device.
 - 2. It has been developed by Bhabha Atomic Research Centre.
 - 3. Device that can spot explosives from 200 meters away.

Which of the above statement(s) are correct?

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

5. Which of the following statement(s) is/are *incorrect* about Regulation of Artificial Intelligence?

- 1. Sundar Pichai advocated for the regulation of Artificial Intelligence keeping in mind both the harm and societal benefits that the technology could bring in.
- 2. NITI Aayog noted the stringent regulation around AI as a major weakness for India.

Codes:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2
- 6. In a significant victory for India's defence sector, the country has bagged a deal to supply 'Swathi radars' to Armenia.

With reference to this deal, consider the following statements:

1. Swathi is a weapon locating radar which provides fast, automatic and accurate location of enemy weapons.



- 2. It is developed by the Defence Research and Development Organisation (DRDO).
- 3. It would be operational in LoC in Jammu & Kashmir from 2022.

Which of the statements given above are correct?

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

7. What is snow blindness?

- (a) Inflammation of cornea
- (b) Inflammation of retina
- (c) Inflammation of eyeball
- (d) Inflammation of sclera

8. What is JOIDES Resolution?

- (a) An environmental protection treaty
- (b) A commercial agreement between India and Jordan
- (c) A research vessel that drills into the ocean floor to collect and study core samples

(d) A UN nuclear cooperation treaty

9. "siRNAs" term seen recently in news is related to which of the following?

- (a) It is a new technique found to develop pesticide alternative to protect plants form viral infection.
- (b) It is a new missile system developed by DRDO.
- (c) It is a new asteroid recently discovered by NASA.
- (d) It is an invasive species recently found in India which is damaging the crops of south India.

10. What is indelible ink that was in news recently?

- (a) Ink used in high end printers
- (b) Ink produced from the soot and smoke
- (c) Ink used in elections to prevent double counting
- (d) Ink used in painting



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ANSWER HINTS

Answer Key									
Q. 1	(a)	Q. 3	(a)	Q. 5	(b)	Q. 7	(a)	Q. 9	(a)
Q. 2	(a)	Q . 4	(a)	Q. 6	(a)	Q. 8	(c)	Q. 10	(c)

1. Correct Option: (a)

Explanation:

• **Statement 3 is incorrect:** Altruistic Surrogacy: It does not include payment of any monetary compensation other than basic medical expenses and insurance coverage.

Supplementary notes:

Methods of Surrogacy

- **Traditional Surrogacy:** In this process egg used is of a surrogate mother, thus she becomes the biological mother of a child.
- Gestational Surrogacy: In this process, surrogate mother's eggs are not used.
 Eggs and sperms used are either donated by intended parents or other persons. The surrogate mother has no biological link with the child.
- Commercial Surrogacy: It includes surrogacies in which payment exceeding basic medical expenses and insurance covers are paid.
- Altruistic Surrogacy: It does not include payment of any monetary compensation other than basic medical expenses and insurance coverage.

2. Correct Option: (a)

Explanation:

• <u>Statement 2 is incorrect:</u> Madhuban Gajar contains high β-carotene and iron content.

Supplementary notes:

Bio-fortification

 It is the process of increasing nutritional value of food crops by increasing the density of vitamins and minerals in a crop through either conventional plant breeding; agronomic practices or biotechnology.

- The bio fortified crop-MadhubanGajar was developed by ShriVallabhhaiVasrambhaiMarvaniya, a farmer scientist from Junagadh district, Gujarat.
 - It contains high β-carotene and iron content.
 - It is being planted in an area of over 200 hectares in Junagadh, and the average yield, which is 40-50 t/ha, has become the main source of income to the local farmers.
 - The variety is being cultivated in more than 1000 hectares of land in Gujarat, Maharashtra, Rajasthan, West Bengal, and Uttar Pradesh during the last three years.
 - MadhubanGajar carrot variety possesses a significantly higher root yield (74.2 t/ha) and plant biomass (275 gm per plant) as compared to check variety.

3. Correct Option: (a)

Explanation:

• **<u>Statement 2 is incorrect</u>**: It is spread to humans through bites from female phlebotominesandflies – the vector(or transmitter) of the leishmania parasite.

Supplementary notes:

Kala Azar

- Kala-azar also known as Visceral leishmaniasis(VL) is caused by the protozoan parasite of genus Leishmania.
- It is spread to humans through bites from female phlebotominesandflies the vector(or transmitter) of the leishmania parasite.



- The signs and symptoms include fever, weight loss, fatigue, anemia and substantial swelling of the liver and spleen.
- The disease primarily infects internal organs such as the liver, spleen (hence "visceral") and bone marrow. It has been associated with high fatality without any proper diagnosis and treatment.
- The Government of India(GOI) launched a centrally sponsored Kala-azar Control Programme in the endemic states in 1990-91.
- Aim was to improve the health status of vulnerable groups and at-risk population living in Kala-azar endemic areas by the elimination of Kala-azar so that it no longer remains a public health problem.

4. Correct Option: (a)

Explanation:

- <u>Statement 2 is incorrect:</u> It has been developed by DRDO
- **<u>Statement 3 is incorrect</u>**: It is a bomb detection device that can spot 20 homemade explosives from two meters away.

Supplementary notes:

Raider-X

- It has been developed by the High Energy Material Research Laboratory (HEMRL), an arm of the DRDO in Pune and the Indian Institute of Science in Bangalore.
- It is a bomb detection device that can spot 20 homemade explosives from two meters away.
- The data library can also be built in the system to expand its capability to detect a number of explosives in pure form as well as with the contaminants.

5. Correct Option: (b)

Explanation:

 Statement 2 is incorrect: NITI Aayog noted the lack of regulation around AI as a major weakness for India.

Supplementary notes:

• Sundar Pichai, in an editorial, advocated for AI to be regulated keeping in mind both the harm and societal benefits that the technology could bring in. He also said that governments must be willing to align on regulations around AI for "making global standards work".

- While India has been vocal about the use of AI in various sectors, it is far from regulating it.
- A 2018 NITI Aayog paper proposed five areas where AI can be useful. This paper noted the lack of regulation around AI as a major weakness for India.

What is AI?

- Artificial Intelligence or AI is an autonomous decision-making system. It is a constellation of technologies that enable machines to act with higher levels of intelligence and emulate the human capabilities of sense, comprehend and act.
- AI can be described as, "a system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation."
- AI has become an integral part of Information Technology (IT) and this branch mainly focuses on the production of intelligent machines that derive valuable output from the available data and react in accordance with it.
- Quality of data is one of the crucial elements for the success of AI.
- The science of AI is based on various disciplines, which makes it a multidisciplinary field. This is essentially one reason why AI has a plethora of applications.

6. Correct Option: (a)

Explanation:

• **Only statement 3 is incorrect:** Currently, the radar is with the Army in LoC in Jammu & Kashmir to track the source of shelling from Pakistani positions.

Supplementary notes:

Swathi Radar

- Swathi is a weapon locating radar developed by DRDO's Electronics & Radar Development Establishment (LRDE) and manufactured by Bharat Electronics Limited (BEL).
- It is designed to detect and track incoming artillery and rocket fire to determine the point of origin for counter-battery fire.
- It is developed by the Defence Research and Development Organisation (DRDO) and manufactured by the Bharat Electronics Limited (BEL).
- This would be a big boost for Make in India as the Prime Minister has declared a target of increasing exports to Rs 35,000 crore in the next five years.





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- The contract is for four Swathi weapon locating radars which provide fast, automatic and accurate location of enemy weapons like mortars, shells and rockets in a 50 km range.
- It can simultaneously detect multiple projectiles like shells, mortars fired from various locations within a 50-km radius.
- The Indian Army is also using the same radars for its operations along the Line of Control in Jammu and Kashmir where this system is used to trace the source of attack by Pakistani positions.
- The system was handed to the Indian Army on a trial basis in 2018.

7. Correct Option: (a)

Explanation:

• Option (a) is the correct

Supplementary notes:

- Snow blindness, also called arc eye or photokeratitis, is a painful eye condition caused by overexposure to ultraviolet (UV) light.
- When too much UV light hits the transparent outer layer of your eyes, called the cornea, it essentially gives your cornea a sunburn.
- Snow blindness symptoms can be disorienting
- UV rays are of three types based on wavelength:
 - ₀ UV-A
 - ₀ UV-B
 - ₀ UV-C
- UV radiation of wavelengths shorter than **UV-B** is almost completely absorbed by Earth's atmosphere, given that the ozone layer is intact.
- But, UV-B damages DNA and mutation may occur. It causes ageing of the skin, damage to skin cells and various types of skin cancers.
- In the human eye, cornea absorbs UV-B radiation, and a high dose of UV-B causes inflammation of the cornea, called snowblindness, cataract, etc. Such exposure may permanently damage the cornea.

8. Correct Option: (c)

Explanation:

• Option (c) is correct

Supplementary notes:

The JOIDES Resolution

- The JOIDES Resolution (Joint Oceanographic Institutions for Deep Earth Sampling), oten known as JR is a research vessel that drills into the ocean floor to collect and study core samples. Scientists use data from the JR to better understand climate change, geology and Earth's history. It is a part of the International Ocean Discovery Program and is funded by the National Science Foundation.
- The JR is currently transiting to port for maintenance. The next expedition will start on April 26, 2020.
- The JR is used by the International Ocean Discovery Program (IODP), an international, multi-drilling platform research program
- Gurumurthy G.P., a Post-doctoral Research Fellow at the Manipal Centre for Natural Sciences (MCNS), Manipal University, has become the first participant from the university and the first from any private university in the country to participate in the prestigious deep sea International Ocean Discovery Programme (IODP).
- Gurumurthy was among the 30 scientists from 26 countries to sail in Joides Resolution, a deep sea drilling research vessel.

About the deep sea International Ocean Discovery Programme (IODP):

- The International Ocean Discovery Program (IODP) is an international research collaboration that coordinates seagoing expeditions to study the history of the Earth recorded in sediments and rocks beneath the ocean floor.
- IODP is dedicated to advance scientific understanding of Earth by sampling, instrumenting and monitoring sub-seafloor environments.
- The Earth deep below the seafloor contains a unique record of our planet's history and structure. Scientists study the subseafloor to better understand Earth's components, processes, and phenomena. This research helps answer questions about fundamental aspects of our planet such as the past global environment, the deep biosphere, plate tectonics, and deep fluid flow.

9. Correct Option: (a)

Explanation:

• **Option (a) is correct:** Researchers developed



pesticide alternative to protect plants form viral infection. The programme first triggers plants' cells to multiply the virus, which creates viral ribonucleic acid molecules (RNAs). Using special enzyme scissors, the plants then detect these molecules and cut them — a process which produces 'small interfering RNAs' (siRNAs).

<u>Supplementary notes:</u>

Small interfering RNAs' (siRNAs)

- A novel approach to vaccinate plants against viruses can be used as an alternative to toxic pesticides that is harmful both to insects and the environment.
- During a virus attack, plants initiate a twostage molecular defense programme which protects them "both at the site of the infection and throughout its structure.
- The programme first triggers plants' cells to multiply the virus, which creates viral ribonucleic acid molecules (RNAs). Using special enzyme scissors, the plants then detect these molecules and cut them — a process which produces 'small interfering RNAs' (siRNAs).
- The siRNAs spreads throughout the plant and attach them to a protein called Argonaute. The siRNAs then leads the protein to RNAs viruses to kill them.
- After six weeks, 90 per cent of the vaccinated plants did not show any signs of infection, but all the untreated plants were killed by the virus

10. Correct Option: (c)

Explanation:

Option (c) is the correct

Supplementary notes:

Electoral Ink or Indelible Ink

Electoral ink, indelible ink, electoral stain or phosphoric ink is semiа permanent ink or dye that is applied the forefinger (usually) to of voters during elections in order to prevent electoral fraud such as double voting.

- It is an effective method for countries where identification documents for citizens are not always standardised or institutionalized.
- The most common election ink used worldwide was invented by Filiberto Vázquez Davila, a Mexican biochemical engineer.

• Application:

- Indelible ink is used as an effective security feature to prevent double voting in elections or the case may be (like Indian government has structure to use this ink for curbing the corruption and double entry in demonetization).
- Ink is normally applied to the left hand index finger, especially to the cuticle where it is almost impossible to remove quickly. Ink may be applied in a variety of ways, depending on circumstance and preference.

Composition:

- This ink typically stays on skin for 72–96 hours, lasting 2 to 4 weeks on the fingernail and cuticle area.
- The election ink used in India puts a permanent mark on the cuticle area which disappears only with the growth of new nail.
- It can take up to 4 months for the stain to be replaced completely by new nail growth.
- Electoral stain typically contains a pigment for instant recognition; a silver nitrate which stains the skin on exposure to ultraviolet light, leaving a mark that is impossible to wash off and is only removed as external skin cells are replaced.
- Industry standard electoral inks contain 10%, 14% or 18% silver nitrate solution, depending on the length of time the mark is required to be visible. Although normally water-based, electoral stains occasionally contain a solvent such as alcohol to allow for faster drying, especially when used with dipping bottles, which may also contain a biocide to ensure bacteria aren't transferred from voter to voter.





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