

Q.1) CAR-T is a personalized form of treatment for –

- a) AIDS
- b) Tuberculosis
- c) Sickle cell anaemia
- d) Cancer

Q.1) Solution (d)

CAR-T

- Personalized form of cancer treatment.
- It is a form of immunotherapy stimulating the body's immune system to help fight cancer.
- Under this, a virus is used to insert genes into T-cells (a special type of immune cell) which then modifies the Chimeric Antigen Receptor (CAR). These engineered CAR-T cells – programmed to recognize and destroy the patient's cancer cells - are multiplied in huge numbers and then infused back into the patient.

Q.2) Which country has recently approved 1st human – animal embryo experiment?

- a) China
- b) USA
- c) Japan
- d) France

Q.2) Solution (c)

Growing human organs in animal body

- Recently Japanese researchers have successfully developed functional mouse kidneys inside rats using stem cells.
- In the 1st step, CRISPR/Cas9 technique was used to genetically silence rat embryos so that the rats did not grow kidney on their own.
- Then the genetically modified blastocysts (clusters of cells formed after egg fertilization), of the rat embryo were inserted with pluripotent stem cells from mice.
- The altered rat embryo was then implanted back into rat wombs to continue fertilization.
- The stem cells then differentiated to form the missing kidney in the rats that was functional.
- This could be replicated in Humans.

Q.3) Which of the following benefit can come out of our understanding of human genome sequence?

1. Genetic disorders like cystic fibrosis or sickle cell anaemia can be identified.
2. Personalised medication can be prescribed.
3. Treatments for common cancers can be developed.

Select the correct option using the codes given below

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.3) Solution (d)

All the options are deductive in nature.

Q.4) Consider the following statements regarding Gene Drive Technology –

1. It alters the rules of inheritance from parent to offspring.
2. Vector borne diseases can be controlled using the technology.

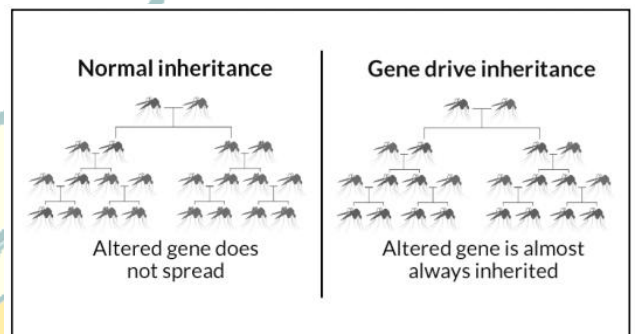
Which of the above statements is/are correct?

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

Q.4) Solution (c)

Gene drive technology

- In a breakthrough in the global fight for malaria, scientists have wiped out an entire population of malaria-carrying mosquitoes in lab conditions using a CRISPR gene drive technology.
- Gene drive technology is a genetic engineering technology that can permanently change the traits of a population or even an entire species.
- Gene drives are genetic elements that pass from parents to unusually high numbers of their offspring, thereby spreading quickly.
- Gene drives occur naturally but can also be engineered.



How does it work?

- The gene drive technology is basically designed to introduce a genetic tweak in the population of a species by altering the rules of inheritance from parent to offspring.
- Firstly using CRISPR gene editing tool, a gene called 'doublesex' in female mosquitoes is disrupted.

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- This genetic tweak of double-sex gene follows gene drive inheritance.
- Here the gene drive inheritance makes the female mosquitoes inherit two copies of the disrupted gene.
- When the female mosquitoes inherit two copies of the disrupted gene, they develop like males and are unable to bite or lay eggs.

Q.5) Consider the following statements regarding National Stem Cell Registry –

1. It comes under the aegis of Department of Science and Technology.
2. A person enrolling for Pradhan Mantri Jan Arogya Yojana will be automatically enrolled in National Stem Cell Registry.
3. It will help in treating patients with blood-related disorders.

Which of the statements given above is/are correct?

- a) 1 and 3 only
- b) 2 and 3 only
- c) 3 only
- d) All of the above

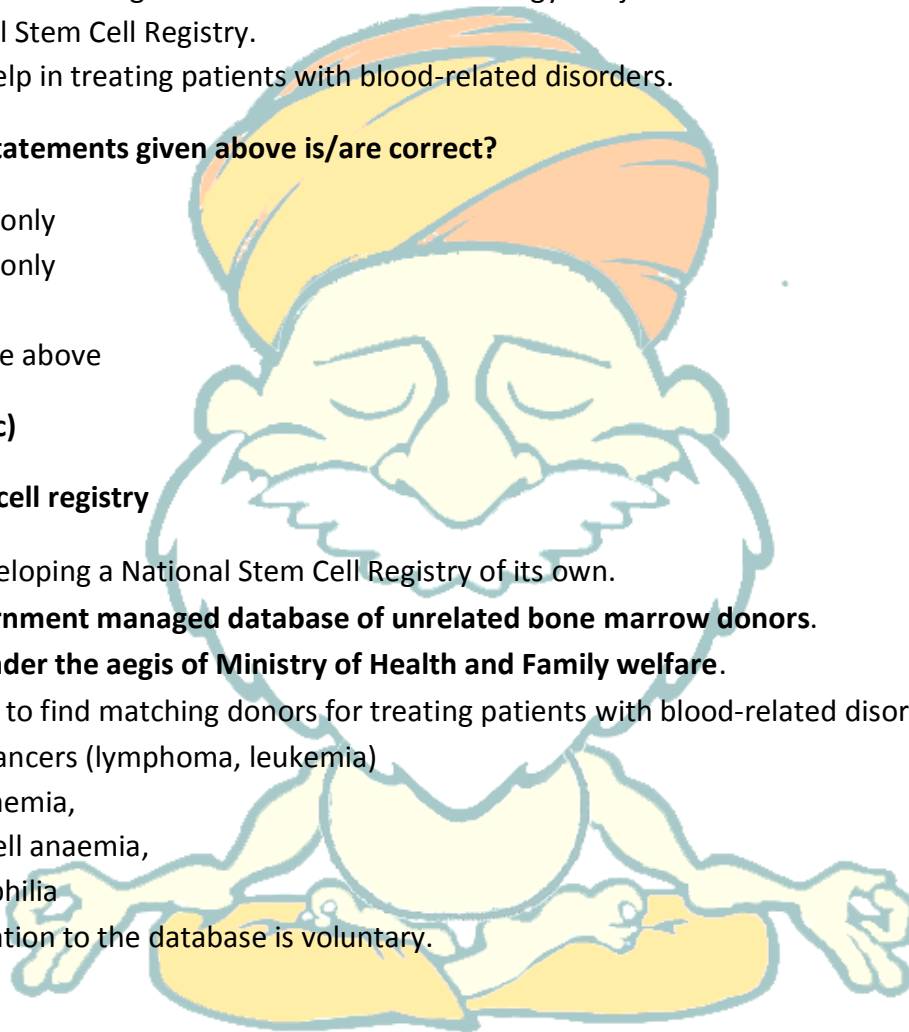
Q.5) Solution (c)

National stem cell registry

- India is developing a National Stem Cell Registry of its own.
- **It is a government managed database of unrelated bone marrow donors.**
- **It comes under the aegis of Ministry of Health and Family welfare.**
- Main aim is to find matching donors for treating patients with blood-related disorders such as
 - blood cancers (lymphoma, leukemia)
 - thalassaemia,
 - sickle-cell anaemia,
 - haemophilia
- The registration to the database is voluntary.

Importance

- About 3.5-5Lakh people in India suffer from blood-related disorders like thalassaemia which require frequent blood transfusions. The only cure for blood related disorders is bone-marrow transplantation.
- **Matching Donors**
 - For bone-marrow transplantation, the donor and patient should have exactly the same white blood cell type.
 - Siblings usually have the exact match and thus suitable for bone-marrow transplantations.
 - Thus matching donors is extremely low and the database will help connect unrelated matching donor



Q.6) Which of the following is incorrect regarding Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001?

- a) A farmer can produce using any seed protected under the act.
- b) Seed Producers will have exclusive rights against the protected variety and criminal remedy in case of infringement of rights.
- c) Researcher can use any of the registered variety under the act for conducting an experiment or research.
- d) There is provision for compensation to the farmers for non-performance of variety.

Q.6) Solution (b)

Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001

To give effect to the TRIPS agreement under WTO, India enacted PPV&FRA 2001.

The aim of the act is to encourage the development of new varieties of plant, by protection the rights of farmers and plant breeders.

Rights under the Act

- Breeders' Rights
 - Seed Producers will have exclusive rights against the protected variety (Section 64)
 - **Civil remedy** in case of infringement of rights
- Researchers' Rights: Researcher can use any of the registered variety under the Act for conducting an experiment or research.
- Farmers' privilege
 - A farmer can produce using any seed protected under the PPV&FR Act, 2001 (section 39)
 - Not entitled to sell branded seeds.
 - Compensation to the farmers for non-performance of variety.
 - Protection to farmer if he is ignorant of legal provision.

Q.7) Consider the following statements with respect to 3-Parent Baby?

1. This technology will protect children from all genetic diseases.
2. It involves gene editing of nuclear DNA of biological mother.

Which of the statements given above is/are correct?

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

Q.7) Solution (d)

Three parent baby

- Apart from receiving the usual “nuclear” DNA from its mother and father, the embryo would also include a small amount of healthy mitochondrial DNA from a woman donor.
- This is resorted to when the actual mother is suffering from an **incurable mitochondrial disease**.
- **Other genetic disease cannot be cured by this technique.**
- This technique involves removing the faulty mitochondrial DNA from the actual mother and nucleus from the mother’s egg and the resultant egg fertilizes with the sperm cell of the father outside the body (in-vitro).
- **Note – There is no gene editing involved here.**

Q.8) Which of the following can be considered as a case of allograft?

1. Heart transplant among identical twins.
2. Bone marrow transplant from one cousin to another.
3. Transplants of skin from mother to daughter.

Select the correct answer using the code given below:

- a) 1 only
- b) 2 only
- c) 2 and 3 only
- d) All of the above

Q.8) Solution (c)

Allograft

- It is the transplant of an organ or tissue or cells from one individual to another of the same species with a different genotype (genetically non-identical donor) although of a compatible blood type.
- For example, a transplant from one person to another, but not an identical twin, is an allograft.
- Allografts are commonly used in the transplants of skin, corneas, hearts, livers, kidneys, and bone and bone marrow, although transplants of the last often come from relatives.

Q.9) Consider the following statements regarding DNA Data storage technology –

1. The Personal Data Protection Bill, 2018 advocates to legalise its use.
2. It involves the use of DNA to store data as alternate data storage to binary data storage
3. History of genetic disorder in human beings can be traced using this technology.

Select the correct option –

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

Q.9) Solution (c)

Statement 1 is factually incorrect. There is no such provision in the bill.

Statement 3 is also absurd, clear form the explanation given below.

DNA data storage

- Use of DNA to store data as alternate data storage to binary data storage.
- Encoding and decoding binary data to and from synthesized strands of DNA.
- An alternative to hard drives storage system is progressing in the form of DNA-based data storage.
- DNA—which consists of long chains of the nucleotides A, T, C and G—is life's information-storage material.
- Data can be stored in the sequence of these letters, turning DNA into a new form of information technology.

Q.10) Consider the following statements:

1. Induced Pluripotent Stem Cells can be used to treat blood disease like thalassaemia, sickle-cell anaemia and haemophilia.
2. Meristematic Tissue show totipotency in plant tissue culture.
3. Rice was the first crop to be genome sequenced

Which of the statements given above is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.10) Solution (d)

INDUCED PLURIPOTENT STEM CELLS (IPS CELLS) AND THEIR SIGNIFICANCE

- iPS are adult stem cells are adult stem cells, like in umbilical cord cells or bone marrow cells, that can be induced to show properties of stem cells.
- They are mostly use in therapeutic cloning to treat degenerative diseases like diabetes, Parkinson's, Alzhiemers etc.
- They are created by stimulating mature, already specialised cells back into a juvenile state without the need for an embryo.

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- These can be derived from the patient themselves, making them less likely to be rejected.
- The cells can be transformed into a range of different types of cells, and their use is a key sector of medical research.
- Further owing to ethical issues embryonic cells are banned in countries such as Ireland and in Latin America.
- Therefore use of iPS cells in therapeutic cloning is rather significant.

Meristematic tissues consist of a group of cells that have the ability to divide. These tissues are small, cuboidal, densely packed cells which keep dividing to form new cells. These tissues are capable of stretching, enlarging and differentiating into other types of tissues as they mature.

Meristematic tissues give rise to permanent tissues. Meristematic tissues can be of three types depending on the region where they are present: Apical meristems, lateral meristems, and intercalary meristems.

Rice was the first sequenced crop genome, paving the way for the sequencing of additional and more complicated crop genomes. The impact that the genome sequence made on rice genetics and breeding research was immediate, as evidenced by citations and DNA marker use. The impact on other crop genomes was evident too, particularly for those within the grass family

Q.11) Consider the following statements regarding 'IndiGen Initiative' –

1. It is the 1st of its kind whole genome sequencing of Indians.
2. It will enable genetic epidemiology of diseases.
3. Genome sequencing of 1,00,000 Indians were done covering all states and ethnicities.
4. It was carried out by Institute for Stem Cell Science and Regenerative Medicine (InStem) in association with IIT Delhi.

Which of the above statements are correct?

- a) 1 and 2 only
- b) 1, 2 and 3 only
- c) 1, 2 and 4 only
- d) All of the above

Q.11) Solution (a)

Indigen Initiative

- **'IndiGen' is the 1st of its kind whole genome sequencing of Indians.**
- IndiGen programme aims to undertake whole genome sequencing of thousands of individuals **representing diverse ethnic groups from India.**
- The objective is to enable **genetic epidemiology** and develop public health technologies applications using population genome data.
- **It was carried out by CSIR to accelerate the study of genomics in India.**

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- 'Indigen' is precursor to Genome India project under Bioscience Mission for Precision Health and Optimal Wellbeing of Department of Biotechnology.
- 'Indigen' initiative will go a long way in development of precision medicine, personalized medicine for various diseases and increase awareness of genetic disorders in India.

Q.12) Consider the following statements with respect to artificial leaf –

1. Artificial leaf is a lab-grown leaf using Recombinant DNA technology.
2. It absorbs carbon dioxide from the air and converts it into fuel.

Which of the above given statements is/are correct?

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

Q.12) Solution (b)

Artificial leaf

- Device used to harness solar energy and convert it into usable chemical energy.
- Generally a cobalt and silicon coated Perovskite is immersed in water that is split into hydrogen and oxygen in the presence of sunlight.
- The hydrogen so formed is then used to produce 'syngas' (hydrogen and carbon monoxide) which can be compressed to form liquid fuel that is used in vehicles.

Q.13) Scuba Rice that is often seen in news relates to which of the following?

- a) Flood-resistant rice
- b) Rice fortified with Vitamin A
- c) Another name for seaweed
- d) Pest-resistant rice

Q.13) Solution (a)

Scuba Rice:

It is a new rice variety tested in India and Bangladesh that can survive up to two weeks of complete submergence in water, providing farmers with protection against short-term flooding. The flood-resistant SUB 1 gene, when transferred into popular rice varieties, allows them to retain their characteristics. This research has led to the official release of flood-tolerant local rice varieties across Asia.

Q.14) CCR5-delta 32, recently in news, is related to which of the following?

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- a) Gene editing
- b) Proton therapy
- c) Genetic mutation
- d) Organ transplantation

Q.14) Solution (c)

A genetic mutation known as CCR5-delta 32 is responsible for the two types of HIV resistance that exist. CCR5-delta 32 hampers HIV's ability to infiltrate immune cells. The mutation causes the CCR5 co-receptor on the outside of cells to develop smaller than usual and no longer sit outside of the cell.

In 2018 a Chinese doctor for the 1st time performed gene editing on the embryonic stem cell using CRiSPR technique.

- The CRiSPR technique was used to modify the CCR5 gene on the embryonic cells of the couples to make them resistant to the HIV virus.
- One of the couples subsequently gave birth to twins – Lulu and Nana.

However CCR5 gene is not just associated with HIV, it may also play an important role in the inflammatory response and in cognitive function.

Q.15) Consider the following statements about the Earth Bio Genome Project:

1. It aims to sequence the genomes of all of earth's currently described eukaryotic biodiversity.
2. It is an open source DNA database.
3. It is funded by Global Environment Facility and supported by host of organisations like World Bank and IUCN.

Which of the statements given above is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.15) Solution (b)

Earth bio-genome project

- International collaboration to sequence and digitize the genomes of every eukaryotic biodiversity on Earth over a period of 10 years.
- It is an open-source DNA database.
- Will help in planning environmental conservation initiatives.

Issue

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- May lead to digital bio-piracy (because it is open-source) which is against the principle of Nagoya protocol to convention of Biodiversity that requires sharing of benefits with the local communities

Q.16) Which of the following statements is/are correct about the IndOBIS?

1. It aims to sequence the genomes of all marine mammal species in the Arabian Sea, Bay of Bengal and the Indian Ocean.
2. It is partly funded by the recovery programme under the Integrated Development of Wildlife Habitats.
3. It is the joint initiative of Ministry of Environment Forest and Climate Change, Earth Bio-Genome Project and IUCN.

Select the correct answer using the code given below:

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) None of the above



Q.16) Solution (d)

IndOBIS collects data sets of occurrences of identifiable marine species at a specific time and place collected mainly in the Arabian Sea, Bay of Bengal and the Indian Ocean. (There is no sequencing of the genomes) It is one of the more than 20 regional nodes of the **Ocean Biogeographic Information System (OBIS)**.

IndOBIS supplies the global scientific community with various types of geo referenced information on the biodiversity of Indian Ocean.

CMLRE, as the Nodal agency, integrate and collate information from sources that lie scattered among several agencies, institutions and individuals within the Indian Ocean region.

Achievements



- 1,10,199 occurrence records of marine organisms reported from Indian Ocean archived and hosted at www.iobis.org
- 1096 voucher specimens of rare deep-sea organisms collected onboard FORV Sagar Sampada maintained at FORV Referral Centre
- All samples are assigned a unique voucher id and a database has been created for the same
- New records of unique deep-sea organisms such as gigantic sea spiders (*Ascorhynchus levissimus*), enigmatic sea pens (*Gyrophyllum hirondellei*), echinoderms such as stalked crinoids

The Ocean Biogeographic Information System (OBIS) is a web-based access point to information about the distribution and abundance of living species in the ocean. It was developed as the

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information management component of the ten year Census of Marine Life (CoML) (2001-2010), but is not limited to CoML-derived data, and aims to provide an integrated view of all marine biodiversity data that may be made available to it on an open access basis by respective data custodians

Q.17) Consider the following statements:

1. DNA finger printing is the process of determining an individual's DNA characteristics, which are as unique as fingerprints.
2. DNA barcoding is a process to identify a species rather than an individual.

Which of the above statements are correct?

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

Q.17) Solution (c)

DNA profiling (also called DNA fingerprinting) is the process of determining an individual's DNA characteristics, which are as unique as fingerprints. DNA analysis intended to identify a species, rather than an individual, is called DNA barcoding.

DNA profiling is a forensic technique in criminal investigations, comparing criminal suspects' profiles to DNA evidence so as to assess the likelihood of their involvement in the crime. It is also used in parentage testing, to establish immigration eligibility, and in genealogical and medical research. DNA profiling has also been used in the study of animal and plant populations in the fields of zoology, botany, and agriculture

Q.18) 'Mitochondrial Eve', recently seen in news, relates to which of the following?

- a) Genetic disease due to mutation in mitochondrial genes.
- b) Technology used to produce a three parent babies.
- c) Common female ancestor from which all humans trace their descent.
- d) Genetic changes taking place in mitochondria when females hit menopause.

Q.18) Solution (c)

Mitochondrial Eve

- In human genetics, Mitochondrial Eve is the matrilineal most recent common ancestor for all living humans i-e the most recent woman from whom all living humans descend in an unbroken

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line purely through their mothers and through the mothers of those mothers, back until all lines converge on one woman.

- The male analog of the Matrilineal Eve is the Y-chromosome ADAM, the individual from whom all living humans are patrilineal descended.

Q.19) Consider the following statements regarding 'Artificial blood' –

1. It performs the function of RBC and platelets but not that of WBC and plasma.
2. Personalised development of artificial blood, making transfusion safe, has been done for the first time in United States recently.
3. It can be used to remove infection in cases of Ebola, SARS etc

Which of the above statements is/are correct?

- a) 1 only
- b) 2 only
- c) All of the above
- d) None of the above

Q.19) Solution (d)

Artificial Blood

- Substitute for red blood cells only. [Hence **cannot be used to remove infection in cases of Ebola, SARS etc**]
- It performs the function of RBC only and not of white cells, platelets, and plasma.
- Designed for the sole purpose of transporting oxygen and carbon dioxide throughout the body.
- Produced through synthetic production, chemical isolation, or recombinant biochemical technology.
- **Note – There is no concept of personalised development of artificial blood.** There cannot be such a concept. This is very clear from above given information.

Q.20) Consider the following statements –

1. MANAV: Human Atlas Initiative is a project to construct a comprehensive map of every tissue of the human body.
2. National genomic grid will facilitate sharing of data on new genome research among government and private institutions.
3. Import of human embryo is completely prohibited in India.

Which of the above statements is/are correct?

- a) 1 only

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- b) 1 and 2 only
- c) All of the above
- d) None of the above

Q.20) Solution (a)

MANAV: Human Atlas Initiative

- Launched by Department of Biotechnology
- It is a project to construct a comprehensive map of every tissue of the human body.
- It seeks to capture human physiology at the tissue level in natural and diseased state.

Objectives

- To provide better biological insights of human physiology
- To understand the roles of tissues and cells linked to various diseases.
- Develop disease models through predictive computing
- Drug discovery

National Genomic Grid

- **It will collect samples from cancer patients**, through a network of pan-India collection centres by **bringing all cancer treatment institutions on board**.
- This research is carried out through the technique of Genome Sequencing.
- NGG will help to study genomic factors influencing cancer and identifying the right treatment modalities for the Indian population. The grid to be formed will be in line with the National Cancer Tissue Biobank (NCTB) set up at the Indian Indian Institute of Technology, Madras.
- National Cancer Tissue Biobank (NCTB), is a joint initiative of the Department of Science and Technology (DST), Government of India and Indian Institute of Technology, Madras.
- The biobank collects cancer tissue samples with consent from patients diagnosed with cancer.
- The aim is to provide researchers with high quality of cancer tissues and the patient data in order to facilitate cancer research that will lead to improvements in cancer diagnosis and treatment.

Import of human embryo is prohibited in India, **except for research purpose**.

Q.21) India's first international Women's Trade Centre (iWTC) is established in which of following State/UT?

- a) Kerala
- b) Maharashtra
- c) Delhi
- d) Gujarat

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Q.21) Solution (a)

- Kerala will set up India's first international women's trade centre (iWTC), in consonance with the United Nations sustainable development goals (SDGs), in Kozhikode.

Q.22) The term '51 Pegasi b' sometimes seen in news in the context of

- a) Cyber Attacks
- b) Solar Mission
- c) Artificial Intelligence
- d) Exoplanet discovery

Q.22) Solution (d)

- Michel Mayor and Didier Queloz were awarded The Nobel Prize in Physics 2019 for discovering first exoplanet named '51 Pegasi b' orbiting a solar-type star.
- Exoplanet or extrasolar planet is a planet outside the Solar System.
- NASA's Transiting Exoplanet Survey Satellite (TESS), a space telescope designed to search for exoplanet.

Q.23) Consider the following statements:

1. The Article 131 of the Constitution declares Delhi as the seat of the Supreme Court.
2. Constitution authorises the President of India to appoint other place or places as seat of the Supreme Court.

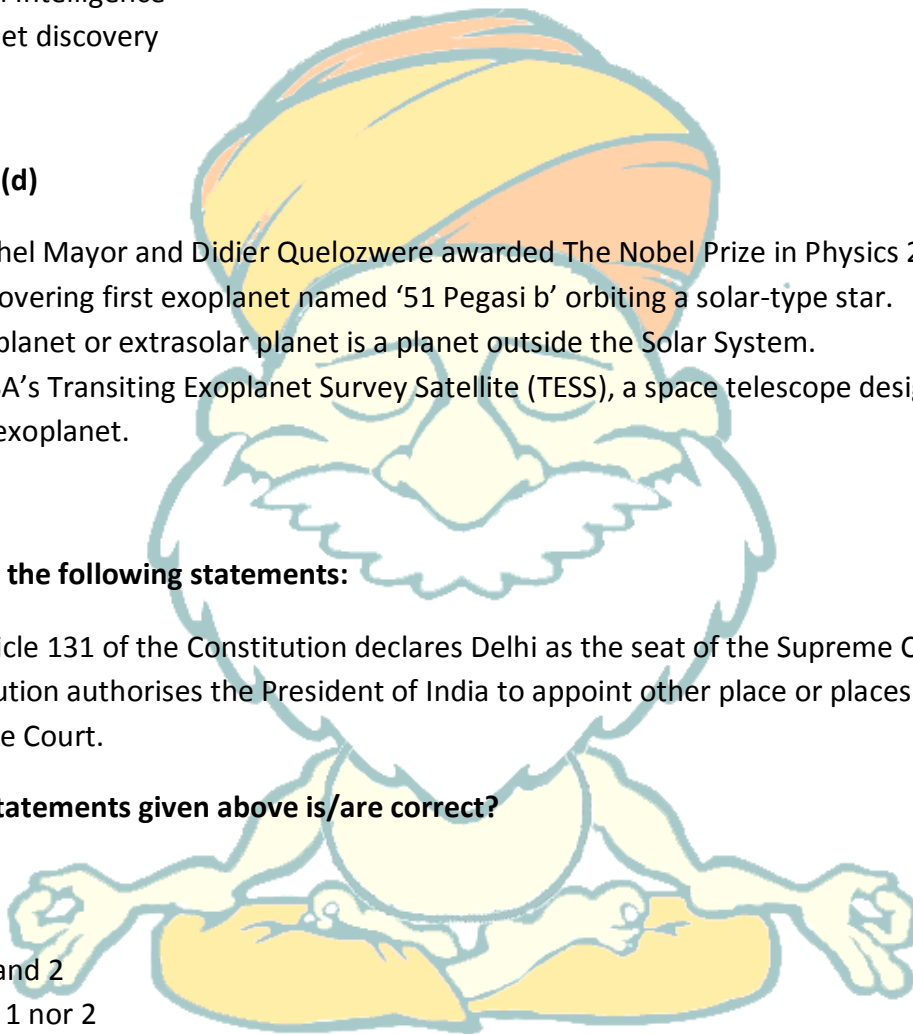
Which of the statements given above is/are correct?

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

Q.23) Solution (d)

Statement 1 Statement 2

Incorrect Incorrect



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The Constitution declares Delhi as the seat of the Supreme Court under Article 130. Article 131 deals with original jurisdiction of the Supreme Court.

Constitution authorises the chief justice of India to appoint other place or places as seat of the Supreme Court. He can take decision in this regard only with the approval of the President.

Q.24) Keeladi is an urban settlement of Sangam Age on the banks of which of the following river?

- a) Cauvery
- b) Vaigai
- c) Pennar
- d) Ponnaiyar

Q.24) Solution (b)

- Keeladi/Keezhadi is a archaeological excavation site belonging to Sangam period located in Sivagangai district, Tamil Nadu.
- The excavation study suggested that the second urbanisation (the first being Indus) of the Vaigai plains happened in Tamil Nadu around 6th century BCE as it happened in the Gangetic plains.
- Tamil Nadu Archaeology Department (TNAD) published a report titled 'Keeladi-An Urban Settlement of Sangam Age on the Banks of River Vaigai.'

Q.25) Consider the following statements about Debug Fresno Project:

1. Under the project, male anopheles mosquitoes carrying Wolbachia are released into the environment.
2. It uses the approach called Sterile Insect Technique (SIT).
3. It was undertaken in African countries affected by malaria.

Which of the statements given above is/are incorrect?

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

Q.25) Solution (d)

Statement 1 Statement 2 Statement 3

Incorrect Correct Incorrect

Under “Debug Fresno”, the male *Aedes aegypti* mosquitoes carrying *Wolbachia* is released into environment to shrink the numbers of the disease-carrying *Aedes aegypti* mosquitoes. *Aedes aegypti* is responsible for spreading zika, dengue and chikungunya. Approach adapted is known as Sterile Insect Technique (SIT) - released male *Aedes aegypti* mosquitoes, made effectively sterile by carrying *Wolbachia* (a bacterium used to sterilise mosquitoes). Debug Fresno is the USA’s largest release of male mosquitoes carrying *Wolbachia*. Similar action by Singapore is called “Project *Wolbachia*”.

Q.26) Consider the following statements with respect to ‘Black softshell turtle’.

1. It is listed as ‘Critically Endangered’ under the IUCN Red List.
2. In India it can generally be found in Assam.

Which of the above statements is/are correct?

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

Q.26) Solution (b)

The black softshell turtle or Bostami turtle (*Nilssonina nigricans*), previously placed in genus *Aspideretes* is a species of freshwater turtle found in India (Assam) and Bangladesh (Chittagong and Sylhet).

IUCN – Extinct in the Wild

Q.27) ‘Ambergris’, is a term associated with

- a) Olive Ridley Turtles
- b) Sperm Whales
- c) Indian Pangolins
- d) Red Sanders

Q.27) Solution (b)

Ambergris is formed from an intestinal secretion of the sperm whale. It is highly valued by perfumers as a fixative that allows the scent to last much longer.

Q.28) Consider the following statements with respect to 'Thylacine'.

1. Fossilised remains of thylacines have been found across the Indus Valley Civilization sites.
2. It was once the world's largest marsupial carnivore.

Which of the above statements is/are correct?

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

Q.28) Solution (b)

Thylacine now extinct, is one of the largest known carnivorous marsupials, evolving about 4 million years ago. The last known live animal was captured in 1933 in Tasmania. It is commonly known as the Tasmanian tiger because of its striped lower back, or the Tasmanian wolf because of its canid-like characteristics. It was native to Tasmania, New Guinea, and the Australian mainland.

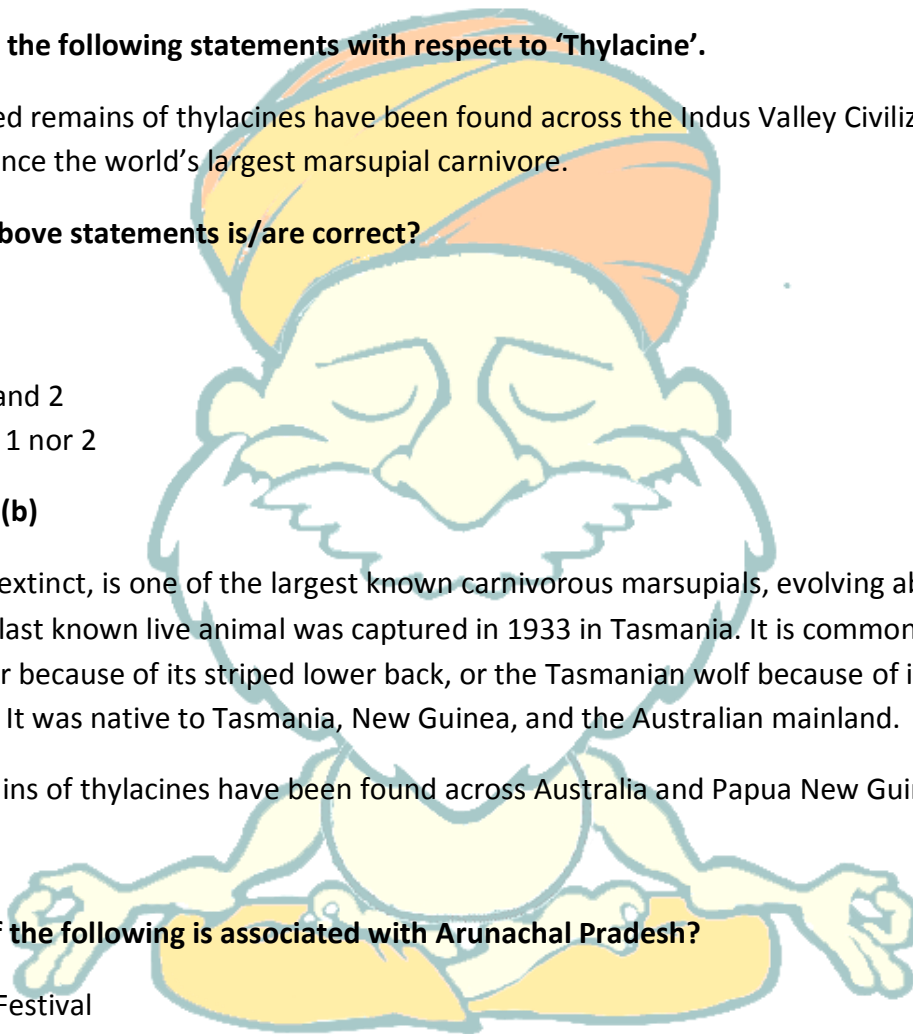
Fossilised remains of thylacines have been found across Australia and Papua New Guinea.

Q.29) Which of the following is associated with Arunachal Pradesh?

1. Solung Festival
2. River Sisseri
3. Chapchar Kut

Select the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above



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Q.29) Solution (a)

Solung Festival is a popular agricultural festival celebrated by the Adi Tribes of Arunachal.

River Sisseri (known as Sissar in the Adi language) flows through Arunachal Pradesh.

The Chapchar Kut is a festival of Mizoram.

Q.30) 'Hershey-Chase experiment' was in news recently. It is concerned with?

- a) Deoxyribonucleic Acid
- b) Antiretroviral Therapy
- c) Reverse Osmosis
- d) None of the above

Q.30) Solution (a)

The Hershey–Chase experiments were a series of experiments conducted in 1952 by Alfred Hershey and Martha Chase that helped to confirm that DNA is genetic material.

