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1. 'I am overworked' campaign is in the context of which of the following

- A. Corporate Workers
- B. Police
- C. Doctors
- D. Manual Labourers

Answer: C

Explanation

- Demanding regulated working hours, and standardised working and living conditions, resident doctors across India have joined hands to start a unique campaign called I am overworked
- As part of the campaign, the doctors will be wearing a band/badge with these words while doing their duty. There will be no strike or gathering but a silent appeal to the Union Health Minister
- The campaign, meanwhile, is aimed at —highlighting the issues of unregulated duty hours, poor working and living conditions and increasing number of depression and suicides among resident doctors in the country, noted the group of doctors.

2. Consider the following statements in the context of Nipah Virus

1. The first outbreak of Nipah virus in India, took place in Uttarakhand.
2. The symptoms of the virus are similar to those of influenza

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: B

Explanation

- The outbreak of Nipah virus took place in 2018 in Kerala
- The symptoms of Nipah are similar to that of influenza such as fever, muscle pain and respiratory problems
 - ✓ It may also present itself in humans in the form of Acute Encephalitis Syndrome (AES)
- But sometimes a person can have an asymptomatic infection and be a carrier of Nipah and not show any symptoms

3. Cataract affects which part of the eye?

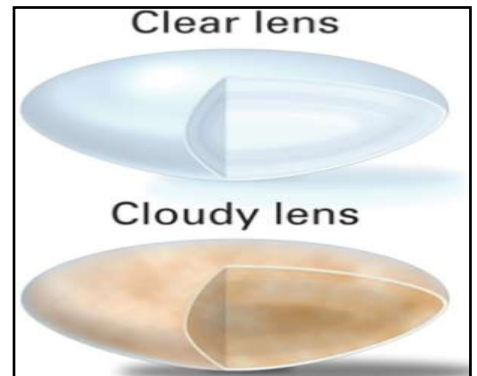
- A. Lens
- B. Pupil
- C. Cornea

D. Retina

Answer: A

Explanation

- Inside our eyes we have natural lens which bends (refracts) light rays that come into the eye to help us see
- If one has cataract, it means the lens has become cloudy
 - ✓ It is like looking through a foggy or dusty car windshield
- Dr. Patricia Bath, a pioneering ophthalmologist who became the first African American female doctor to receive a medical patent after she invented a more precise treatment of cataracts, has died.



4. Which of the following may be the reasons for Post-term Pregnancy?

1. It can be hereditary
2. Irregular menstrual cycles
3. Narrow size of pelvis

- A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1,2 and 3

Answer: D

Explanation

- Usually, the due date is calculated as 280 days or 40 weeks from the past menstrual cycle. The baby is expected to be full-term after the 38th week
- The reason for post-term pregnancy is not known
 - ✓ It can be hereditary
 - ✓ If a woman has a history of post-term pregnancy, then chances of recurrence are high
 - ✓ It can also happen if the woman has a narrow pelvis, in which case the head of the baby may not fit in, thus leading to the cervix not opening up
 - ✓ It is also seen among women with irregular menstrual cycles

5. Burn-out recently in news is best defined as:

- A. a serious health issue by WHO
B. death of people due to PM 2.5
C. death of people due to overwork

D. death due to stubble burning

Answer: A

Explanation

- WHO has classified 'Burn-out' as an occupational phenomenon and not a medical condition
- Burn-out is a syndrome conceptualised as resulting from chronic workplace stress that has not been successfully managed.
- Characterised by three-dimensions
 - ✓ feelings of energy depletion or exhaustion
 - ✓ increased mental distance from one's job or feelings of negativism or cynicism related to one's job
 - reduced professional efficacy
- It specifically applies to the occupational context and should not be applied to describe experiences in other areas of life

6. Pink Bollworm is related to which of the following crops?

- A. Rice
- B. Wheat
- C. Cotton
- D. Pulses

Answer: C

7. Which of the following thing would an astronaut observe when in the Space Station?

1. Candle burns with the same tear-shaped flame
2. Water does not bubble when it boils

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: B

8. Which of the following are the by-products of a fuel cell?

- A. Water
- B. Carbon dioxide
- C. Hydrogen Sulphide
- D. Methane

Answer: A

Explanation

- A fuel cell uses hydrogen gas (H_2) and oxygen gas (O_2) as fuel
- The products of the reaction in the cell are water, electricity and heat
- A team of scientists from India has developed a selenium-graphene-based catalyst which is more efficient, costs less and also remains stable for longer than the usual platinum based catalysts

9. Which of the following statement(s) in the context of Anthrax are true?

1. Anthrax is a viral disease and can also infect animals like horses, sheep, cattle and goats.
2. It is a contagious disease and can spread through droplet infection

- A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: D

Explanation

- Anthrax is a serious infection disease caused by rod-shaped bacteria known as *Bacillus anthracis*
- It can be found naturally in soil and commonly affects domestic and wild animals around the world
- People can get sick with anthrax if they come in contact with infected animals or contaminated animal products
- Humans, pigs and dogs are comparatively less susceptible and only get infected if exposed to copious amount of spores.
- It is not contagious, which means it cannot spread through cold or flu

10. Which of the following statement(s) is are true in the context of Genetically modified crops?

1. Bt brinjal has been approved for seed production by the GEAC.
2. It is the first GM food crop that has been cultivated in India.

- A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: A

Explanation

- GEAC has approved large-scale field trials and seed production, but the clearance is facing stiff resistance from farmers, environmentalists and consumer groups

- Bt cotton is the only other gm crop permitted in the country.
- Of the three gm food crops in India brinjal, mustard and potato -- awaiting permission for large-scale field trials and seed production, brinjal is the first one to get GEAC approval

11. Which of the following statement(s) is/are correct in the context of NASA's PUNCH mission?

1. It enhances the study of structures of the Sun's atmosphere by enhancing them in real time
2. It will be so close to the sun as to view the Corona directly

Which of the following statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation

- PUNCH stands for Polarimeter to Unify the Corona and Heliosphere
- It focused on understanding the transition of particles from the Sun's outer corona to the solar wind that fills interplanetary space
- It will consist of a „constellation“ of four suitcase-sized microsats that will orbit the Earth information and study how to corona, which is the atmosphere of the Sun, connects with the interplanetary medium. The mission is expected to be launched in 2022
- The mission will image and track the solar wind and also the coronal mass ejections – which are huge masses of plasma that get thrown of the Sun's atmosphere
- PUNCH mission enhances the structures of the Sun's atmosphere by tracking these structures in real time
- Since Sun's corona is much fainter than its surface layers, it cannot be viewed by the instruments directly. So it will block out the light from the Sun to view its corona and the structure in it

12. Lunar Evacuation System Assembly (LESA) is developed by?

- A. NASA
- B. ESA
- C. ISRO
- D. Roscosmos

Answer: B

Explanation

- Lunar Evacuation System Assembly, or LESA is developed by European Space Agency (ESA)

- It is a pyramid-like structure whose purpose is to rescue an astronaut should he or she suffer an injury on the lunar surface
- It can be operated by a single astronaut to rescue a fallen colleague
- It enables an astronaut to lift their crewmate onto a mobile stretcher in less than 10 minutes, before carrying them to the safety of a nearby pressurised lander

13.Tri-Netra technology recently in news has been in context of which of the following?

- A. Railways
- B. Air Early Warning System
- C. Drone
- D. None of the above

Answer: A

Explanation

- Ministry of Railways has initiated a proposal to install TRI-NETRA systems on locomotives for enhancing the vision of Locomotive Pilots in inclement weather
- TRI-NETRA stands for Terrain imaging for diesel drivers Indra-red, Enhanced optical & Radar Assisted system
- It shall be made up of high-resolution optical video camera, high sensitivity infra-red video camera and additionally a radar-based terrain mapping system
- Three components of the system shall act as three eye (Tri-Netra) of the Locomotive Pilot

14.Which of the following statement(s) in the context of Gravitational Waves is/are true?

1. They are a consequence of Einstein's theory of Specific Relativity
2. Gravitational waves behave like light waves

Which of the following statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: D

15.Which of the following will exhibit Tyndall effect?

1. Salt Solution
2. Milk
3. Copper Sulphate Solution

4. Starch Solution

Which of the following statements is/are correct?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 4 only
- D. 2 and 4 only

Answer: D

Explanation

- The Tyndall effect is the scattering of light as a light beam passes through a colloid. The individual suspension particles scatter and reflect light, making the beam visible
- The amount of scattering depends on the frequency of the light and density of the particles
- Milk and Starch solution will show Tyndall effect

16. Consider the following statement(s) in the context of eggs.

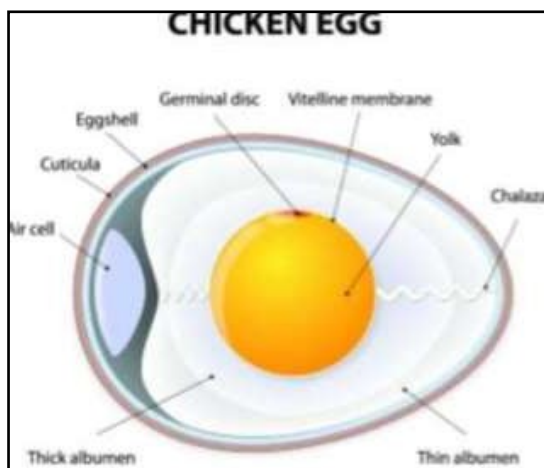
1. If a fresh egg is placed in water it will float
2. The eggshell is a permeable outer layer

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: D

Explanation

- When the eggs get old, the gases inside them escape and they take in air over time through a semi-permeable membrane and form an air bubble
- Fresh eggs will not have that air bubble as they are tightly packed



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17.If the 2015 Paris Agreement commitment on global temperature rise is not followed, climate scientists suggest a scenario by 2050, a tipping point beyond which our planet's natural processes trigger uncontrollable warming. Name the scenario.

- A. Hothouse Earth scenario
- B. Water sheet scenario
- C. Toxic air scenario
- D. Dripping scenario

Answer: A

Explanation

- Hothouse Earth is a term used to describe a scenario in which human activity causes a higher global temperature than at any time during the past 1.2 million years, due to a breakdown in the feedback loops that regulate the planet's temperature
- Losing these safeguards would make warming largely beyond our control, no matter how much we subsequently reduced our greenhouse gas emissions
- Ultimately, the authors predicted things would start to stabilise at around 4-5 degree C higher than preindustrial times, with sea levels 60 m higher than today

18.Epidemiology is the study of how diseases spread. In epidemiology, what or who is the patient zero or index case?

- A. Region with no incidence of disease
- B. First documented person with the disease in the investigation
- C. Person from whom the disease has not spread further
- D. The first casualty due to the spread of the disease

Answer: B

Explanation

- Index case is the first case of a condition or syndrome (not necessarily contagious) to be described in the medical literature whether or not the patient is thought to be the first person affected
- India will host the G-20 summit in 2022. Italy was to host the international forum in 2022, but since the year marks the 75th anniversary of India's Independence, so Italy allow
- The index case may or may not indicate the source of the disease, the possible spread, or which reservoir holds the disease in between outbreaks, but may bring awareness of an emerging outbreak
- Patient Zero was used to refer to the supposed source of HIV outbreak in the United States, but the term has been expanded into general usage to refer to an individual identified as the first carrier of a communicable disease in a population, or the first incident in the onset of a catastrophic trend
- The term can also be used in non-medical fields to describe the first individual affected by something negative that since propagated to others, such as the first user on a network infected by malware

19. Ebola virus Disease is a rare and deadly disease that affects humans and _____

- A. Birds
- B. Rodents
- C. Primates
- D. Dogs

Answer: C

Explanation

- Ebola Virus Disease (EVD) is a rare and deadly disease most commonly affecting people and nonhuman primates (monkeys, gorillas and chimpanzees)
- It is caused by an infection with a group of viruses within the genus Ebola virus
 - ✓ Ebola virus
 - ✓ Sudan virus
 - ✓ Reston virus, etc.
- Of these, only four (Ebola, Sudan, Taï Forest, and Bundibugyo viruses) are known to cause disease in people. Reston virus is known to cause disease in nonhuman primates and pigs, but not in people
- Ebola virus spreads to people through direct contact with bodily fluids of a person who is sick with or has died from EVD. This can occur when a person touches the infected body fluids (or objects that are contaminated with them), and the virus gets in through broken skin or mucous membranes in the eyes, nose, or mouth.
- The virus can also spread to people through direct contact with the blood, body fluids and tissues of infected fruit bats or primates. People can get the virus through sexual contact as well.

20. Which of the following is not a feature of cannabis plants?

- A. They are pollinated by bees and insects
- B. It is used to produce industrial hemp products
- C. Male and female flowers are found on different plants
- D. All of the above

Answer: A

Explanation

- It is a genus of medicinal, recreational and fibre plants
- The genus Cannabis comprises a single species, hemp, a stout, aromatic, erect annual herb that originated in Central Asia and is now cultivated worldwide
- A tall cavelike variety is raised for the production of hemp fibre, while the female plants of a short branchier variety are prized as the more abundant source of the psychoactive substance tetrahydrocannabinol (THC), the active ingredient of marijuana

- Cross pollination is the transfer of pollen grains from the anther of one flower to the stigma of a genetically different flower
- ✓ Cannabis along with plants like Coconut Palm, Date Palm, Maize etc. are pollinated by Anemophily (Wind pollination)

21. Bhabha Kavach, recently developed by Indian scientists is

- A. Pills to neutralise the effects of nuclear radiations
- B. Material that can be used as a replacement of lead walls in nuclear establishments
- C. Lightest Bullet-proof jacket
- D. Mosquito repellent to reduce the incidence of dengue, malaria etc.

Answer: C

Explanation

Bhabha Kavach, billed as —India's lightest bullet-proof jacket||, was launched at the International Police Expo 2019 in New Delhi. The bullet-proof jacket, developed jointly by the Ordnance Factories Board and the public sector metals and metal alloys manufacturer MIDHANI, can withstand bullets from an AK-47 assault rifle (7.62 mm hard steel core bullets), and the 5.56 mm INSAS rifle. The Kavach weighs 9.2 kg, a half kilogram less than the weight for a bullet-proof jacket prescribed by the Union Ministry of Home Affairs (MHA).

22. Which of the following committee was appointed to recommend on the “use of cryptocurrencies” in India?

- A. B.N. Srikrishna Committee
- B. Subhash Chandra Garg Committee
- C. K. Kasturirangan Committee
- D. Bimal Jalan Committee

Answer: B

Explanation

Bimal Jalan Committee is appointed by the RBI to look into its Economic Capital Framework. It will review the status, need and justification of various provisions, reserves and buffers held by the RBI.

23. Chandipura virus leads to inflammation of

- A. Lungs
- B. Liver
- C. Heart
- D. Brain

Answer: D

Explanation

Acute Encephalitis Syndrome is caused by an inflammation of the brain due to an infection. While AES can be caused by different viruses, bacteria and parasites, Japanese Encephalitis and Chandipura virus are among its known causes. JE is transmitted by mosquitoes while Chandipura is commonly transmitted by sand flies. The symptoms of Chandipura virus infection are sudden high fever accompanied by headache, convulsions and vomiting, sometimes leading to unconsciousness. There is no specific medicine for the infection.

24. Indian scientists recently developed a “three-component nano-drug delivery system” to cure

- A. Cancer
- B. HIV/AIDS
- C. Hepatitis B
- D. Sickle Cell Anaemia

Answer: A

Explanation

- Researchers from Indian Institute for Science Education and Research (IISER), Thiruvananthapuram, have fabricated a three component nano-drug delivery system. Preliminary laboratory results indicate that the nano-gel targeted cancer cells specifically and efficiently unloads the drug at the site. The nano-assembly was made from three biomolecules – a DNA, a protein (streptavidin) and biotin (vitamin B7).
- It was fabricated in the form of a hybrid nano-gel. The DNA carried the drug, while the biotin was used as a „stitching agent” to tailor the structure. The molecular interaction of the protein and biotin aided the natural self-assembly of the nano-gel.

25. Agent Smith has been recently in news. It is

- A. an American drone deployed in Persian Gulf
- B. a malware infecting Android phones
- C. newly trending video game
- D. a new app to learn about defence forces

Answer: B

26. Which of the following acts as an anti-caking agent in table salt?

1. Potassium Ferrocyanide
2. Calcium Carbonate
3. Potassium Cyanide

Which of the above statements are correct?

- A. 1 and 2 only

- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above

Answer: A

Explanation

- An anti-caking agent is an additive placed in powdered or granulated materials such as table salt or confectionaries to prevent the formation of lumps (caking) and for easing packaging, transport, flowability and consumption
- Some anti caking agents function by absorbing excess moisture or by coating particles and making them water-repellent
- Calcium silicate, Compounds like sodium ferrocyanide and potassium ferrocyanide is commonly used as anti-caking agent
- Natural anti caking agents used in more expensive table salts include calcium carbonate and magnesium carbonate

27. Consider the following statement(s) in the context of POSHAN Abhiyan?

1. It aims to reduce stunting and under-nutrition by 2% and 3% respectively.
2. It falls under the purview of Ministry of Health and Family Welfare.

Which of the above statements are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: D

Explanation

- POSHAN Abhiyaan (National Nutrition Mission - NNM) set up by Government on November, 2017 aims to reduce the level of stunting, under-nutrition, anemia and low birth weight babies.
- Under POSHAN Abhiyaan, the Government has fixed targets to reduce stunting, under nutrition, anemia (among young children, women and adolescent girls) and reduce low birth weight by 2%, 2%, 3% and 2% per annum respectively. Mission also strives to achieve reduction in Stunting from 38.4% (NFHS-4) to 25% by 2022 (Mission 25 by 2022)
- To learn more about POSHAN Abhiyaan click [here](#)

28. Which of the following statement(s) is/are correct in the context of National Essential Diagnostics List (NEDL)

1. India has become the first country to compile such a list.

2. The list recommends diagnostics test in tertiary healthcare.

Which of the above statements are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation

- India has got its first National Essential Diagnostics List (NEDL) finalised by the Indian Council of Medical Research (ICMR) which aims to bridge the current regulatory system's gap that do not cover all the medical devices and in-vitro diagnostic device (IVD).
- With this, India has become the first country to compile such a list that would provide guidance to the government for deciding the kind of diagnostic tests that different healthcare facilities in villages and remote areas require.
- The list is meant for facilities from village till the district level.
- WHO released first edition of essential diagnostics list (EDL) in May 2018. Even though WHO's EDL acts as a reference point for development of national EDL, India's diagnostics list has been customised and prepared as per landscape of India's health care priorities.

29. Which of the following statement(s) is/are correct in the context of Coal in India?

- 1. Around 98% of coal reserves in India are of younger age (15-60 million years).
- 2. India is the 2nd largest producer and importer of coal.

Which of the above statements are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: B

30. Which of the following is affected in the case of Asperger's syndrome?

- A. Locomotion
- B. Cognitive Ability
- C. Social Interaction
- D. Sexual Reproduction

Answer: C

31. What is Pretomanid?

- A. A bacteria found on the surface of moon
- B. Ransomware
- C. New anti-TB drug
- D. None of the above

Answer: C

Explanation

- US Food & Drug Administration (FDA) approved a new drug Pretomanid for treating drug-resistant tuberculosis – MDR-TB and XDR-TB
- It is only the third new anti-TB drug approved for use by FDA in more than 40 years
- Other two being Bedaquiline and linezolid
- Pretomanid was developed by NGO TB Alliance
- Treatment success in MDR-TB patients is about 54%, while it is just 30% in the case of XDR-TB patients (WHO)

32. Which of the following Nitrogen compounds is categorised as a Class A poison?

- A. Nitrogen Monoxide
- B. Nitric Oxide
- C. Nitrogen Peroxide
- D. Ammonia

Answer: C

33. Salmonella, recently found in some batches of MDH spice mix is a

- A. Virus
- B. Bacteria
- C. Protozoa
- D. Fungi

Answer: B

34. Bombay Blood Group has which antigens?

- A. H
- B. A, B and O
- C. A, B, O and H
- D. None

Answer: D

35. Recently, a mobile application Meghdoot was launched by _____ to provide location, and crop and livestock-specific weather based agro advisories to farmers in local languages.

- A. Ministry of Science & Technology
- B. Ministry of Agriculture and Farmers' Welfare
- C. Ministry of Earth Sciences
- D. Both B & C

Answer: D

Explanation

- The Ministries of Earth Sciences and Agriculture have launched a mobile application that will provide location, and crop and livestock-specific weather-based agro advisories to farmers in local languages
✓ It has been developed by experts from the India Meteorological Department and Indian Institute of Tropical meteorology and the Indian Council of Agricultural Research.
- It will provide forecast relating to temperature, rainfall, humidity, and wind speed and direction, which play critical roles in agricultural operations and advisories to the farmers on how to take care of their crops and livestock
- The information would be updated twice a week on Tuesdays and Fridays.
- The app would provide information in the form of images, maps and pictures to help the farmer to have a clearer picture of what is in store
- It has been integrated with WhatsApp and Facebook as well to help farmers share advisories among themselves

36. _____ is the practice of processing data near the edge of the network, where the data is being generated, instead of in a centralised data-processing warehouse.

- A. Banked computing
- B. Edge computing
- C. Shore computing
- D. Independent computing

Answer: B

Explanation

- It is a distributed, open IT architecture that features decentralised processing power, enabling mobile computing and Internet of Things (IoT) technologies
- In edge computing, data is processed by the device itself or by a local computer or server, rather than being transmitted to a data centre

- Edge computing enables data-stream acceleration, including real-time data processing without latency
- It allows smart applications and devices to respond to data almost instantaneously, as its being created, eliminating lag time

37. Which of the following compounds form the Tattoo inks?

1. Lead
2. Chromium
3. Carbon Black
4. Zinc

Select the correct option

- A. 1, 2 and 4
- B. 2, 3 and 4
- C. 1, 2 and 3
- D. All of the above

Answer: C

Explanation

- Tattoo inks are made from a variety of compounds including Titanium dioxide, lead, chromium, nickel, iron oxides, ash and carbon black Some of the pigments are also used in auto-paint
- Tattoo inks may find their way into the lymph nodes which can adversely affect the immune system
- Both phthalates and benzo(a) pyrene tattoo inks have been linked to cancer.

38. Which of the following statement(s) is/are true in the context of Neutrinos?

1. The Kolar Gold Field mines housed one of the earliest laboratories to study and detect neutrinos.
2. Indian Neutrino Observatory is located in Maharashtra.

Select the correct option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation

- Indian neutrino observatory is being planned at Pottipuram village, Theni district, near Tamil Nadu-Kerala border

- Most of the neutrino detectors are at latitudes over 35 deg. It is possible to push such a detector down to almost 8 deg latitude in South India, within proximity to the Equator. This permits neutrino astronomy searches covering the whole celestial sky and study of solar neutrinos passing through the Earth's core.
- The Kolar Gold Field mines housed one of the earliest laboratories to study and detect neutrinos. It was located at a depth of 2,000 m. The first atmospheric neutrinos were detected here in 1965

39.QuEST programme of government of India is related to

- A. Deciphering the Harappan script
- B. Discovering young talent in sports
- C. Quantum computing
- D. Intellectual Property

Answer: C

Explanation

- Quantum-Enabled Science & Technology (QuEST) is a programme set up by
- the Department of Science & Technology
- As a part of the programme, it will invest a sum of Rs 80 crore in a span of three years to facilitate research in this field
- It is working on laying the groundwork and acquiring human resource for building quantum computers in India
- Quantum computers are essentially computers that use the principles of quantum mechanics to solve complex problems and perform calculations. They use qubits to perform computations.
- They are, essentially, the electronic equivalents of the subatomic particles that lie at the base of quantum mechanics, a branch of physics wherein objects can act as a wave and as a particle at the same time.

40.A tube light uses fluorescence (emission of light by a substance that has absorbed light or other electromagnetic radiation) to produce visible light. A tube light uses:

- A. Mercury vapour to produce fluorescence
- B. Mercury vapour to convert UV light into visible light
- C. Phosphor coating to produce UV light
- D. All of the above

Answer: A

Explanation

- Fluorescent light tubes are a low-pressure mercury-vapor gas-discharge lamp that uses fluorescence to produce visible light. An electric current in the gas excites mercury vapor, which produces short-wave ultraviolet light that causes a phosphor coating on the inside of the lamp to glow.

- A fluorescent lamp converts electrical energy into useful light much more efficiently than incandescent lamps. The typical luminous efficacy of fluorescent lighting systems is 50–100 Lumens per watt, several times the efficacy of incandescent bulbs with comparable light output, but less than that of a typical LED bulb.

41. Which of the following statement(s) is/are false in the context of antibiotics?

1. Antibiotic is a chemical substance having the property of destroying the microorganism in high dilution
2. Bactericidal antibiotics are antibiotics which's electively affect the concerned organism and less likely to disturb the normal microbial flora

Select the correct option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: C

Explanation

- Antibiotic is a chemical substance produced by microorganisms having the property of inhibiting the growth of or destroying other microorganisms in high dilution
- Narrow spectrum antibiotics are those which selectively affect the concerned organism and less likely to disturb the normal microbial flora
- Bactericidal antibiotics are those which act by destroying the organism effectively against rapidly multiplying bacteria

42. Which of the following prevents the fall of fruits?

- A. GA3
- B. NAA
- C. Ethylene
- D. Cytokinin

Answer: B

Explanation

- Naphthaleneacetic acid (NAA) is a synthetic plant hormone in the auxin family and is an ingredient in many commercial plant rooting horticultural products
- It is a rooting agent and used for the vegetative propagation of plants from stem and leaf cuttings
- It does not occur naturally and is toxic to plants at high concentration
- It has been understood to prevent premature dropping and thinning of fruits from stems

43. Arrokoth, recently in news, is being related to which of the following

- A. Ballistic missile developed by the US
- B. A distant object in the Kuiper Belt
- C. New spyware
- D. Pest destroying cotton crop

Answer: B

Explanation: About 6.6 billion km from Earth in the Kuiper Belt, beyond the orbit of Neptune, a rock, provisionally named 2014 MU69, nicknamed 'Ultima Thule', has been officially named as 'Arrokoth'

- The Belt consists of a mass of icy objects that include Pluto
- It has an odd shape which consists of two lobes creating an appearance of a doughnut
- It is the most primitive and distant object to have been encountered by a spacecraft
- Arrokoth is the term for "sky" in the Native American languages Powhatan and Algonquian.
- NASA's New Horizons spacecraft sped past this object in January 2019

44. Consider the following statement(s) in the context of stars and gravastars

1. A gravastar behaves differently from normal stars and black holes
2. Unlike the gravastar, a normal star tends to bulge about the equator and get compressed at the poles.

Select the correct option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: C

Explanation

- A gravastar is a gravitational vacuum condensate star made of a core of exotic matter similar to dark energy, which prevents the collapse of a matter shell surrounding it, made of the normal matter that once made up a star. When the star started to collapse at the end of its life, a phase transition would happen that could create this exotic matter before the event horizon could be formed
- This speculative object would be almost as compact as a black hole, but the tiny difference between them would be enough to prevent the formation of the event horizon
- It would be almost impossible to "see" a gravastar, because of the same effect that makes a black hole "black": any light would be so deflected by the gravitational field that it would never reach us

- When black holes are perturbed, they "vibrate" emitting gravitational waves. Indeed, they behave as "bells," that is with a signal that progressively fades away, or "ringsdown." The tone and fading of these waves depends on the only two properties of the black hole: its mass and spin. Gravastars also emit gravitational waves when they are perturbed, but, interestingly, the tones and fading of these waves are different from those of black holes.

45. Techniques such as Fluorescence Microscopy and GeneXpert are associated with the diagnosis of which of the following diseases?

- A. Tuberculosis
- B. HIV AIDS
- C. Dengue
- D. Zika

Answer: A

Explanation

- WHO has aimed at eliminating TB by 2035 and Indian government has vouched to do this by 2025
- CLR SeeTB is a battery operated device that helps in quick identification of the bacteria
- GeneXpert is a molecular test that diagnoses TB by detecting the presence of TB bacteria, as well as testing for resistance to the drug Rifampicin

46. Which of the following can be used in cloud seeding?

- 1. Iodides of potassium
- 2. Dry ice
- 3. Liquid Methane

Select the correct option

- 1. 1 and 2 only
- 2. 2 and 3 only
- 3. 1 and 3 only
- 4. All of the above

Answer: A

Explanation

- Cloud seeding is a kind of weather modification technology to create artificial rainfall
- It works only when there is enough pre-existing clouds in the atmosphere. Rain happens when moisture in the air reaches levels at which it can no longer be held, and cloud seeding aims to facilitate and accelerate that process by making available chemical 'nuclei' around which condensation can take place

- These 'seeds' of rain can be the iodides of silver or potassium, dry ice (solid carbon dioxide), or liquid propane
- The seeds can be delivered by plane or simply by spraying from the ground

47. Arrange the following regions of the sun in the increasing order of their temperature

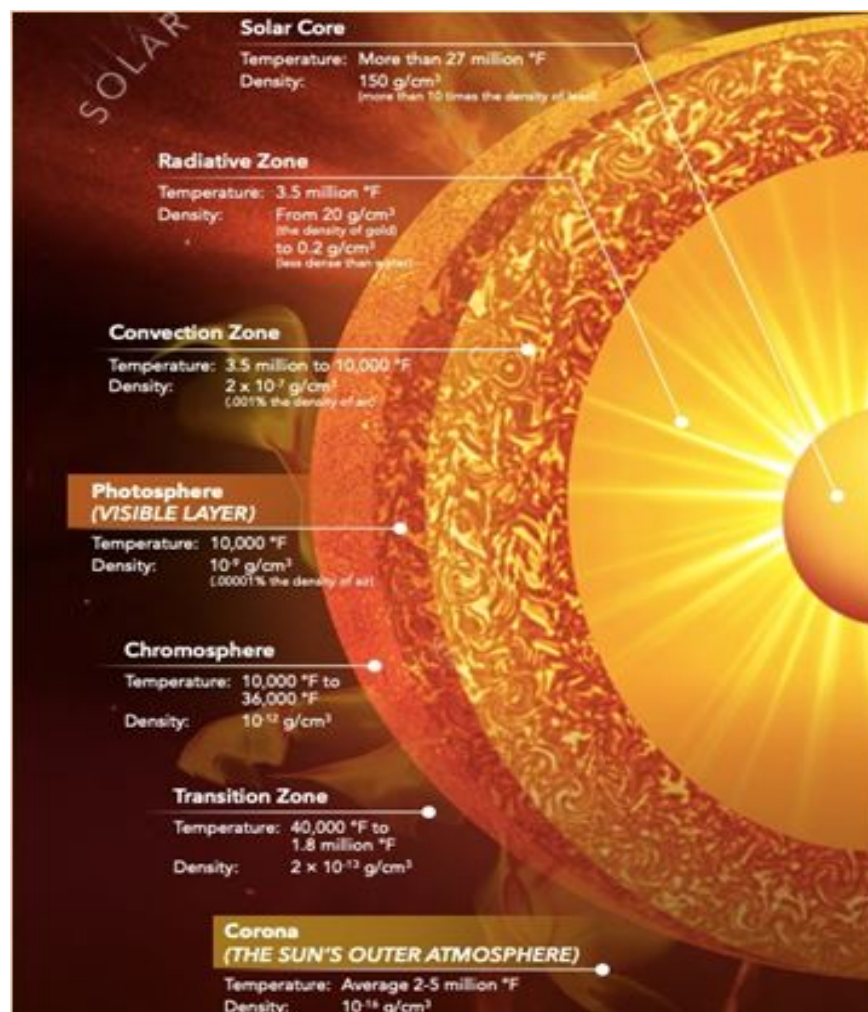
1. Photosphere
2. Core
3. Chromosphere
4. Corona

Select the correct option

- A. 1<2<3<4
- B. 1<3<2<4
- C. 1<3<4<2
- D. 1<2<4<3

Answer: C

Explanation



48. Which of the following strains of poliovirus have not been eradicated?

- A. Wild poliovirus type 1
- B. Wild poliovirus type 2
- C. Wild poliovirus type 3
- D. All are eradicated

Answer: A

Explanation

- Wild poliovirus type 3 has been eradicated, the World Health Organisation said in October 2019, hailing the development as an “historic achievement for humanity” that leaves only one strain of the virus in transmission
- All three types of wild polio can cause paralysis and death, but WHO categorises them separately in terms of eradication because of certain virological differences
- The last confirmed case of WPV3 was recorded in northern Nigeria in 2012
- vWPV2 was declared eradicated in 2015, but WPV1 continues to circulate in Afghanistan and Pakistan
- Non-wild forms of polio — known as vaccine-derived polio — remain in transmission in parts of Africa and Asia, including the Philippines

49. ‘Lumpy Skin’ disease is related to which of the following

- A. Cattle
- B. Rice
- C. Cotton
- D. Vegetables

Answer: A

Explanation

- Outbreak of ‘lumpy skin disease’ in cattle in certain parts of Odisha has prompted China to issue a warning against imports of cattle and cattle products from India
- Lumpy Skin is an infectious disease in cattle which damages the hide and may result in chronic debility, reduced milk production, poor growth, infertility and sometimes death

50. Arrange the following countries in the ascending order of their diaspora population

1. India
2. Mexico
3. China

Select the correct option

- A. $3 < 2 < 1$
- B. $2 < 1 < 3$
- C. $3 < 1 < 2$
- D. $2 < 3 < 1$

Answer: A

Explanation

- As per the International Organisation for Migration's (IOM) Global Migration Report 2020, India continues to be the largest country of origin of international migrants with a 17.5 million diaspora across the world
- India received the highest remittances of \$78.6 billion
- Top three countries of origin of international migrants – India > Mexico (11.8 million) > China (10.7 million)

51. Consider the following statement(s) in the context of hunger in India

1. More than half of the children in India suffer from chronic undernutrition or stunting.
2. UN SDG 3 advocates for Zero Hunger.

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

- A. 1 only
- B. 2 only
- C. 1 and 2 only
- D. None of the above

Answer: C

Explanation

- India is ranked 102 in the Global Hunger Index (GHI) out of 117 qualified countries.
- Nearly 47 million or four out of 10 children in India do not meet their potential because of chronic under nutrition or stunting
- UN SDG 2 advocates for Zero Hunger and the Aichi Biodiversity Target focuses on countries conserving genetic diversity of plants, farm livestock and wild relatives.

52. Which of the following statement(s) in the context of human body is/are correct?

1. Heart is the only organ of human body that can float on water.
2. A newborn baby has more bones than an adult human being.

Select the Correct Option

- A. 1 only

- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: B

Explanation

- Lungs are the only organ that can float on water. Each lung contains about 300 million balloon-like structures called alveoli.
- When these are filled with air, they make lungs the only organ which can float.
- Medical examiners use lung-float test to determine a still birth.
- Babies have more bones than adults because as they grow up, some of the bones fuse together to form one bone. This is because babies have more cartilage than bone. New born babies have around 305 bones.
- A baby's skeleton is mostly made up of cartilage. As a person grows up, most of this cartilage turns into bone in a process called ossification. By adulthood, the skeleton has just 206 bones.

53. Arsenic is a toxic heavy metal which affects _____.

- A. Liver
- B. Lungs
- C. Kidney
- D. All of the above

Answer: D

Explanation

- Arsenic is used as a semiconductor
- It reduces plant transpiration, leaf number and inhibits root multiplication.
- Bangladesh is severely affected by Arsenic pollution
- Contaminated Arsenic was first found in Assam and West Bengal in India
- According to BIS and WHO, the permissible limit of Arsenic in drinking water is 0.01 ppm
- Pteridaceae are the families of plants that grow in Arsenic contaminated areas

54. _____ milk is ideal substitute of human milk.

- A. Cow
- B. Goat
- C. Both A and B
- D. Neither 1 nor 2

Answer: C

Explanation

- Casein is the unique protein in milk and fat is the most variable component of milk
- Lactose is highest in human milk
- Cow and Goat milk is the ideal substitute of human milk
- Buffalo milk has the highest protein
- Yellow colour of cow milk is due to Beta-Carotenoids
- Highest macro-element present in cow milk is Potassium

55. India has eliminated which of the following diseases

1. Polio
2. Maternal and Neonatal Tetanus
3. Yaws
4. Smallpox

Select the Correct Option

- A. 1, 2 and 3
- B. 2, 3 and 4
- C. 1 and 3
- D. All of the above

Answer: B

Explanation

- Smallpox is the first and only human disease that is eliminated worldwide
- India has eliminated Guinea-worm disease (Dracunculiasis) in 2000
- Tropical infection of the skin, bones and joints, Yaws, was eliminated in 2006
- India was officially declared polio free on 27 March 2014
- Maternal and Neonatal Tetanus was eliminated in 2015

56. Which of the following is not true of virions?

- A. Reproduce independently
- B. Contain DNA
- C. Contain RNA
- D. Contain a protein coat

Answer: A

Explanation

- Virion is an entire virus particle, consisting of an outer protein shell called a capsid and an inner core of nucleic acid (either ribonucleic or deoxyribonucleic acid—RNA or DNA).
- The core confers infectivity, and the capsid provides specificity to the virus

57. Which of the statement(s) is/are correct in the context of Heavy Metals

1. Heavy metals have density greater than that of water.
2. All the heavy metals are toxic in nature.

Select the Correct Option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation

- Long Term exposure to toxic heavy metals may result in slowly progressing physical, muscular, and neurological degenerative processes that mimic Alzheimer's disease, Parkinson's disease, muscular dystrophy and multiple sclerosis.
- The other major contaminants found are lead, nickel, chromium, cadmium and copper
- Lead, cadmium, nickel, chromium and copper contamination are more common in non-monsoon periods while iron, lead, chromium and copper exceeded 'tolerance limits' in monsoon periods most of the time
- Arsenic and zinc are the toxic metals whose concentration was always obtained
- The main sources of heavy metal pollution are mining, milling, plating and surface finishing industries that discharge a variety of toxic metals into the environment
- Some lighter metals and metalloids are toxic and, thus, are termed heavy metals though some heavy metals such as gold, typically are not toxic

58. Strandhogg, recently in news is

- A. an endangered species
- B. a new mobile-payment system
- C. a malware
- D. a shallow beach where oil-drilling has started

Answer: C

Explanation

- It is a Malware which allows real-time malware applications to pose as genuine applications and access user data of all kinds
- It can allow Android devices to listen to microphone, steal login credentials, take photos using camera, read SMS and even access photos

59. Which of the following statement(s) is/are incorrect in the context of Trastuzumab?

1. It is a biosimilar drug to treat the cervical cancer
2. It has not been rejected by WHO on the ground of efficacy

Select the Correct Option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: C

Explanation

- WHO announced that it had for the first time approved a “biosimilar” medicine to make breast cancer treatment affordable to women globally
- Biosimilars are medicines derived from living sources rather than chemicals
- The drug has shown “high efficacy” in curing early stage breast cancer and in some cases more advanced forms of the disease

60. Which of the following is/are correct in the context of Microdots?

1. The technology involves engraving the pattern with unique identification.
2. They can only be identified with ultra violet light source.

Select the Correct Option

- A. 1 Only
- B. 2 Only
- C. Both 1 and 2
- D. Neither 1 or 2

Answer: D

61. Which of the following statement(s) is/are the correct in the context of TB?

1. WHO has banned the use of BPAL regimen for the treatment of TB.
2. It is an injectable three-drug regimen for extensively –drug resistant TB.

Select the Correct Option

- A. 1 Only
- B. 2 Only
- C. Both 1 and 2
- D. Neither 1 or 2

Answer: D

Explanation

- It new oral three drug regimen for the extensively –drug resistant tuberculosis (XDR-TB), estimated to have a mortality rate of 60 percent
- The treatment involves pretomanid tablets in combination with bedaquiline and linezolid, collectively referred to as the BPAL regimen
- WHO has recommended for changes in the treatment of drug –resistant TB. Drugs like BPAL can be taken orally, can shorten the regimen and can treat drug resistant TB
- They can replace painful injectable drugs that sometimes causes deafness.

62. India has successfully tests-fired Quick Reaction Surface to Air Missile system. Which of the statements is/are correct in the context ?

1. The radars used in the system have 270-degree coverage.
2. It can engage multiple targets within the range of around 25-30 km.

Select the Correct Option

- A. 1 Only
- B. 2 Only
- C. Both 1 and 2
- D. Neither 1 or 2

Answer: B

Explanation

- Quick Reaction Surface to Air Missile (QRSAM) system is likely to be inducted into the armed forces by 2021
- QRSAM weapon system, which operates on the move, comprises fully automated command and control, active array battery surveillance radar, active array battery multifunction radar and launcher.
- Both the radar are four-walled having 360-degree coverage with search on move and track on move capability.
- QR-SAM system can also engage multiple targets within a range of around 25 to 30 km with two vehicle configurations for area air defence.
- The specificity of QR-SAM missile is that it intended to defend Army formations operating in plains and semi-desert areas, including those enemy missiles that suddenly appear at close range.

63. Which of the following statements is/are incorrect in the context of post of chief of Defence staff

1. It will replace the post of Permanent Chairman COSC
2. CDS will not come under the ambit of Right to information Act.

Select the Correct Option

- A. 1 Only
- B. 2 Only
- C. Both 1 and 2
- D. Neither 1 or 2

Answer: C

Explanation

- In his capacity as the Permanent Chairman, COSC (Chief of Staff Committee), the CDS would administer tri-Services organisations, agencies and commands related to Cyber and Space.
- CDS would come in the ambit of 'Right to Information Act, in accordance with the provisions of the RTI Act, 2005.

64. _____ alloys are used in thermo meters as an environment-friendly alternative to mercury.

- A. Strontium
- B. Copper
- C. Gallium
- D. Chromium

Answer: C

Explanation

- Gallium is soft, silvery metal primarily used in electronic circuits, semiconductors and LEDs
- It is never found as a free element and cannot be found in substantial amounts in minerals
- It can withstand higher temperatures than mercury

65. Which element is used as a source of energy in space probes?

- A. Uranium
- B. Americium
- C. Plutonium
- D. Curium

Answer: D

Explanation

- Named after Marie and Pierre Curie, Curium (Cm) was first produced by bombarding uranium or plutonium with neutrons in nuclear reactors in 1944
- Curium batteries are used in pacemakers, spacecraft, satellites and planetary explorers
- Isotope of Curium Cm-242 is an alpha particle emitter
- Alpha particle is equivalent of a helium atom's nucleus. Because of its relatively large size and low kinetic energy, it can be easily stopped

66. _____ is the heaviest element that can be formed by neutron bombardment of lighter elements i.e., it is the last element that can be prepared in macroscopic quantities.

- A. Mendelevium (Md)
- B. Bohrium (Bh)
- C. Nobelium (No)
- D. Fermium (Fm)

Answer: D

Explanation

- It is highly radioactive transuranic element of the actinide series that is made by bombarding plutonium with neutrons
- The intense neutron bombardment conditions needed to create fermium exist in thermonuclear explosions and can be replicated in the laboratory
- It was discovered in the debris of the first hydrogen bomb explosion in 1952

67. It was probably the first metal mined and crafted by humans. Its discovery can be traced back to 9000 BCE in the Middle East. Humans have used it from carrying water to carrying electricity. This metal is?

- A. Iron
- B. Copper
- C. Aluminum
- D. Silver

Answer: B

68. Which of the following noble gases are correctly matched with their usage

1. Neon : Flash lamps
2. Krypton : high powered lasers
3. Xenon : Advertising signs

Select the Correct Option

- A. 1 and 3 only
- B. 1 and 2 only

- C. 2 only
- D. All of the above

Answer: C

Explanation

- Argon : Metallurgical processes, electric light bulbs, transistors
- Helium : Cooling gas in lasers, flow-gas in liquid chromatography, airships
- Neon : Discharge tubes
- Xenon & Krypton: Photographic flash, light house.

69.Operation Sankalp, recently in news, is related to which of the following

- A. To make India free from non-communicable disease by 2030
- B. To release all inmates who have served half their maximum term without trial
- C. Indian Navy operation to ensure safe passage of Indian Flag Vessels transiting through the Strait of Hormuz
- D. None of these

Answer: C

Explanation

- In the backdrop of the deteriorating security situation in the Gulf region, post attacks on merchant ships in the Gulf of Oman in Jun 19, Indian Navy had commenced Maritime Security Operations, code named Op SANKALP, in the Gulf Region on 19 Jun 2019 to ensure safe passage of Indian Flag Vessels transiting through the Strait of Hormuz.
- Indian Navy warships and aircraft were deployed to establish presence, provide a sense of reassurance to the Indian merchantmen, monitor the ongoing situation and respond to any emergent crises.

70.Which of the following statement(s) is are correct about Saras Mk2

1. It is the second fighter aircraft after Tejas
2. It is an Indo-French joint venture

Select the Correct Option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: D

Explanation: It is the first-ever indigenous light passenger aircraft Saras manufactured by the Council of Scientific and Industrial Research (CSIR) - National Aerospace Laboratories (NAL)

71. Sea Guardians is a joint military between which of the following countries

- A. Japan and USA
- B. India and Japan
- C. India and Bhutan
- D. China and Pakistan

Answer: D

72. Which of the following committees were formed by the Government of India for defence?

- 1. D.B. Shekhatkar Committee
- 2. Bimal Jalan Committee
- 3. Balwant Rai Mehta Committee

Select the Correct Option

- A. 1 only
- B. 1 and 2 only
- C. 1, 2 and 3 only
- D. None of the above

Answer: A

73. TOI 700 d recently in news is

- A. a new rice species that requires less water
- B. an Earth-size planet in its star's habitable zone
- C. the name of missiles fired by Iran on US bases in Iraq
- D. None of the above

Answer: B

74. Defence Minister Rajnath Singh recently performed the traditional inauguration ceremony of K9-Vajra-T. What is K9-Vajra-T?

- A. Howitzer Gun
- B. Ballistic Missile
- C. Glide Bomb
- D. Radar

Answer: A

Explanation

- The defence minister flagged off K9 VAJRA-T Gun from Larsen & Toubro (L&T) Armoured System Complex at Hazira in Gujarat.
- It is a self-propelled howitzer (a short gun for firing shells on high trajectories at low velocities)
- It has its roots in the K9 Thunder, the mainstay of South Korea Army

75. India is in talks with which country to purchase Stinger air-to-air missiles?

- A. Israel
- B. France
- C. Russia
- D. USA

Answer: D

Explanation: Indian Apaches will carry air-to-air Stinger missiles along with the default Hellfire precision strike missions

76. Indian Air Force is set to resurrect 222 Squadron, the Tiger sharks? This squadron comprises which of the fighter jets of Indian Air Force?

- A. Rafale
- B. Tejas
- C. MIG
- D. Sukhoi

Answer: D

Explanation

- The fighter aircraft squadron of Sukhoi Su-30 fighter aircrafts will be stationed in Thanjavur in Tamil Nadu
- It will be the second frontline fighter squadron of the IAF based in South India
- Sukhoi Su-30 is the twin-engine multirole fighter aircraft developed in Soviet Union

77. Recently, DRDO developed Chilli grenade or mirchi bomb, using the famous raja chilli or 'bhut jolokia'. This chilli belongs to which region of India?

- A. North East
- B. Andhra Pradesh
- C. Rajasthan
- D. Madhya Pradesh

Answer: A

Explanation

- Defence Research Development Organisation (DRDO), which had first identified bhut jolokia as the hottest chilli in the world, had been working for some years to tap the fire of the chilli
- From chilli spray, which can be kept in a woman's purse for self defence to grenades that can be lobbed to control crowds or manage hostage situations, there are now a range of products—a mirchi bomb for every situation.
- Bhut jolokia is a sensitive plant which only grows in exacting conditions of soil, temperature and rainfall, to yield the kind of fire that once put it at the top of the Scoville scale, which is used to measure the fire in chilli
- The aim was to make a weapon that would only target the ocular system and not the respiratory system.

78. 'Winged Raider' has been in news recently. What does it relate to

- A. A sub-class of raptors under severe stress due to climate change
- B. Military Exercise
- C. Ransom ware
- D. Special Police patrols

Answer: B

Explanation

- Indian Army conducted its biggest airborne exercise called the 'Winged Raider' comprising of more than 500 special forces troops in the North- Eastern theatre
- It demonstrated the operational readiness of Paratroopers and Air Warriors to undertake airborne missions

79. The term 'Circular Error Probability (CEP)' is related to which of the following?

- A. Telecommunications
- B. Ballistic Missiles
- C. Disease detection
- D. Economic choices

Answer: B

Explanation

- Circular Error Probability (CEP) defines the radius of a circle within which 50 percent of all shots of a given projectile are expected to land
- India conducted a test launch of the K-4 intermediate-range submarine-launched ballistic missile (SLBM)

- As a nuclear-capable missile, the K-4 will eventually arm India's fleet of nuclear-propelled ballistic missile submarines. Currently, a single Indian ballistic missile submarine, INS Arihant, is operational. The K-4 is reported to have a range capability of around 3,500 kilometres
- CEP of K-4 is much more sophisticated than Chinese missiles

80. We come across cyber-attacks from time to time. Which of the following terms are correctly matched in this context?

1. Phishing: E-mail
2. Pharming: Installing a malicious code
3. Vishing: Telephonic call
4. Smishing: Text messages

Select the correct option

- A. 1 only
- B. 1, 3 and 4
- C. 1, 2 and 3
- D. All of the above

Answer: D

Explanation

- Phishing: Criminal activity that attempts to fraudulently obtain sensitive information. Fraudster sends phishing email that will direct you to a website requesting you to enter your personal information such as User ID and Password
- Pharming: Fraudster installs malicious code on a personal computer or server. This code then redirects any clicks you make on a website to another fraudulent Website without your consent or knowledge.
- Vishing: Fraudsters also use the phone to solicit your personal information. This telephone version of phishing is sometimes called vishing. Vishing relies on "social engineering" techniques to trick you into providing information that others can use to access and use your important accounts
- Smishing: Just like phishing, smishing uses cell phone text messages to lure consumers in

81. India, recently stepped up to help which neighbouring country against the outbreak of Measles?

- A. China
- B. Maldives
- C. Myanmar
- D. Sri Lanka

Answer: B

Explanation

- The outbreak of Measles in Maldives comes less than three years after WHO declared it measles-free
- India and Maldives have signed a MoU on Health cooperation in 2019
- India is also helping build a 100-bed Cancer Hospital in Hulhumale as part of its \$800 million Line of Credit to the island nation, a popular tourist destination and home to over 4,00,000 people.

82. Which of the following statement(s) is/are correct in the context of Project NETRA?

1. It is a project launched by DRDO
2. It is an early warning system in space to detect debris and other hazards to Indian satellites

Select the correct option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: B

Explanation

- Indian Space Research Organization (ISRO) has initiated Project NETRA which is an early warning system in space to detect debris and other hazards to Indian satellites
- It will give India its own capability in space situational awareness (SSA) like the other space powers— which is used to 'predict' threats from debris to Indian satellites
- It also goes so far as to serve as an unstated warning against missile or space attack for the country.

83. Government has recently abolished the anti-dumping duty on Purified Terephthalic Acid (PTA). PTA is used in manufacturing of

- A. Pesticides
- B. Polyester production
- C. Medicines
- D. None of the above

Answer: B

Explanation

- PTA is a raw material used in the production of polyester staple fibre and filaments
- It is critical input for textile fibres and yarns, and its easy availability at competitive prices is desirable to unlock immense potential in the textile sector, which is a significant employment generator

84. Which of the following is/are correct in the context of pyrogen test?

1. It is carried out to check impurity or substance that can cause adverse side-effects
2. The test is performed on rats

Select the Correct Option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation: The abnormal toxicity test is carried out to check potential hazardous biological contamination in vaccine formulations.

Towards freeing the guinea pig

1) **Pyrogen test**, carried out in rabbits, can now be replaced by bacterial endotoxin test or a monocyte activation test

2) **Abnormal toxicity test** can be waived if a compliance certificate from National Control Laboratory is obtained

The mandate has been listed in the eighth edition of Indian Pharmacopoeia and comes into effect from July 1

PETA'S POSITION

- It is unethical to intentionally cause pain, fear and loneliness in animals
- Animal testing is a 'bad science' because 92 out of every 100 drugs that pass animal tests fail in humans
- It is wasteful because animal testing prolongs suffering of people waiting for effective cures



85. Which of the following statement(s) in the context of human body temperature are correct?

1. Researchers have found that the body temperatures have been declining over the last two centuries
2. The decrease in temperature can be explained by reduction in metabolic rate

Select the Correct Option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: C

Explanation: Different studies have found the human body temperature averaging out differently, including at 97.7°, 97.9° and 98.2°F.

Trends

- Body temperature is higher in younger people, in women, in larger bodies and at later times of the day

- Bodies of men born in the early to mid-1990s is on average 1.06°F cooler than those of men born in the early 1800s
- Body temperature of women born in the early to mid-1990s is on average 0.58°F lower than that of women born in the 1890s.
- Decrease in body temperature is the result of changes in the environment over the past 200 years, which have in turn driven physiological changes

86. Which of the following are space-borne observatories of NASA?

1. Spitzer
2. Chandra X-Ray
3. Hubble

Select the Correct Option

- A. 1 and 3 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. All of the above

Answer: D

Explanation

- NASA's concept of Great Observatories is a series of four space-borne observatories designed to conduct astronomical studies over many different wavelengths (visible, gamma rays, X-rays, and infrared)
- An important aspect of the Great Observatory program was to overlap the operations phases of the missions to enable astronomers to make contemporaneous observations of an object at different spectral wavelengths.
 - ✓ Hubble — UV, Visible and near-Infrared
 - ✓ Compton — Gamma Ray
 - ✓ Chandra — X-ray
 - ✓ Spitzer — Infrared

87. Which of the following statement(s) is/are correct in the context of Cancer in India?

1. There is a decreasing trend in the incidence rates of breast cancer across the country
2. The incidence rates of cervical cancer in India are increasing

Select the Correct Option

- A. 1 only
- B. 2 only

- C. Both 1 and 2
D. Neither 1 nor 2

Answer: D

Explanation

- There is a clear increasing trend in the incidence rates of breast cancer across the country, with an annual percentage increase that ranges from 1.4% to 2.8% and is more pronounced in urban areas than in rural areas.
- Incidence rates are also increasing for cancer types associated with overweight and obesity and lower levels of physical activity, such as colorectal cancer, uterine cancer, ovarian cancer and prostate cancer
- There is a clear decreasing trend in the incidence rates of cervical cancer in most regions in India (annual percentage change, -2.0% to -3.5%), with age-standardized incidence rates as low as 6 per 1,00,000 in women in Kerala. India accounts for about one-fifth of the global burden of cervical cancer, despite decreasing incidence rates in several regions of the country.

88. Recently a new variety of rice, Muktoshrī called IET 21845, has been developed. It is famous because it is

- A. drought-resistant
B. insect-resistant
C. arsenic-resistant
D. high-yielding variety

Answer: C

Explanation

- Researchers have developed and commercialised a rice variety that is resistant to arsenic. Several studies have shown that arsenic from groundwater and the soil can enter the food chain through paddy
- The new rice variety, Muktoshrī — also called IET 21845 —, was developed jointly by the Rice Research Station at Chinsurah coming under West Bengal's Agriculture Department and the National Botanical Research Institute, Lucknow
- According to the World Health Organization, long-term exposure to arsenic, mainly through drinking water and food, can lead to poisoning. Skin lesions and skin cancer are the most characteristic effects

89. Which of the following states has banned CFL and filament bulbs from November 2020?

- A. Kerala
B. Delhi
C. Haryana
D. Maharashtra

Answer: A

Explanation

- Kerala Finance Minister TM Thomas Isaac made a bold announcement that the state will impose a ban on the sale of compact fluorescent lamps (CFL) and incandescent (filament) bulbs starting November this year as part of sustainable energy policy
- Streetlights and bulbs in government offices across the state will be converted to light-emitting diode (LED) bulbs
- The announcement is in line with the government project of Filament-free Kerala envisaged in 2018 as part of the state's Urja Kerala mission
- Filament bulbs contain the mercury element which, when broken, is polluting in nature

90. Which of the following correctly defines Dark Fibre?

- A. Internet used for cyber-attacks
- B. Unused optical fibre infra
- C. Superfast internet speeds at night
- D. None of the above

Answer: B

91. Adrain helmets were the first combat helmets issued by which of the following Army during World War I?

- A. France
- B. Germany
- C. England
- D. Japan

Answer: A

Explanation

- Adrain helmet, introduced by the French army in 1915 were the first combat helmet
- It is often described as the first modern steel helmet
- New research has found it performs better than modern military helmets in protecting the head from shock waves created by overhead blasts
- In protection from ballistics and blunt impacts, modern military helmets have advanced. But in terms of protecting the brain from shock waves from nearby blasts, the modern helmets are no better than WWI helmets

92. Indradhanush is a joint military exercise between India and

- A. Maldives

- B. United Kingdom
- C. United States
- D. France

Answer: B

93. India will be hosting RAISE 2020 summit in the near future for social empowerment. It is related to which of the following?

- A. Artificial Intelligence
- B. Self-medication
- C. Rape
- D. None of the above

Answer: A

Explanation

- Ministry of Electronics and Information Technology is organizing the first Global AI Summit in India (RAISE 2020), "RESPONSIBLE AI FOR SOCIAL EMPOWERMENT" with a focus on AI for Social Transformation, Inclusion, and Empowerment
- It will bring together the innovators, investors and collaborators of the technology that will power the future
- RAISE 2020 offers AI startups across the Globe a platform to connect, showcase, share their expertise and exchange ideas with eminent Venture Capitalists, distinguished Global Leaders and decision makers from the Government

94. H1N1 virus strain or swine flu causes the infection of

- A. Respiratory System
- B. Liver
- C. Brain
- D. Eyes

Answer: A

Explanation

- First recognised in 1919, it is a human respiratory infection caused by an influenza strain that started in pigs
- It may spread by
 - ✓ Droplet infection
 - ✓ skin-to-skin contact
 - ✓ Saliva

✓ Touch

95. Melanin is the primary determinant of skin colour. It is found in

- A. Hair
- B. Eye
- C. Ear
- D. All of the above

Answer: D

Explanation

- It is found in hair, the pigmented tissue underlying the iris of the eye, and the stria vascularis of the inner ear
- Melanin in skin is produced by melanocytes, found in the basal layer of the epidermis
- Some humans have very little or no melanin synthesis in their bodies, a condition called albinism

96. Raman effect is related to

- A. Scattering of light
- B. Interference of light
- C. Total Internal Reflection
- D. None of the above

Answer: A

Explanation

- India celebrates National Science Day on 28 February every year in honour of physicist C.V. Raman's discovery of the Raman Effect, which gave Asia its first Nobel in the Sciences in 1930
- Raman Effect is the process of scattering of light particles by molecules of a medium. The scattering occurs due to a change in the wavelength of light as it enters the medium. When a beam of light travels through a dust-free, transparent chemical, a small fraction of the light emerges in directions other than where it should

97. Huntington disease affects

- A. Brain
- B. Lungs
- C. Heart
- D. Respiratory Tract

Answer: A

Explanation

- It is a progressive genetic disorder affecting the brain that causes uncontrolled movements, impaired coordination of balance and movement, a decline in cognitive abilities, difficulty in concentrating and memory lapses, mood swings and personality changes
- <https://pib.gov.in/newsite/PrintRelease.aspx?relid=200496>

98. Which of the following element is the most abundant in Earth's crust?

- A. Silicon
- B. Iron
- C. Oxygen
- D. Aluminium

Answer: C

Explanation

- Oxygen - 46%
- Silicon - 28%
- Aluminum - 8.3%
- Iron - 5.6%
- Calcium - 4.2%

99. Which of the following is/are false about Lipids?

1. They are insoluble in water
2. They act as structural components of cell membranes

Select the Correct Option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: D

Explanation

- Lipids are non-polar hydrocarbons, which makes them hydrophobic and hence insoluble in water
- Certain classes of lipids, such as fats, phospholipids, and steroids are crucial to all living organisms
- They function as structural components of cellular membranes, energy reservoirs, and signaling molecules

100. Which of the following is/are true in the context of Earth?

1. The length of the day is increasing as the Earth is getting older
2. The orbit of the Earth has also changed over time

Select the Correct Option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation

- Earth spun 372 times a year 70 million years ago, compared to the current 365. This means the day was $23\frac{1}{2}$ hours long, compared to 24 today
- It is important to note that the period of Earth's orbit has remained the same. In other words, one year 70 million years ago was as long as an one year today
- <https://indianexpress.com/article/explained/dinosaur-fossil-mountains-ofoman-earth-seventy-million-years-ago-moons-gravity-6315930/>

101. Pratyush and Mihir are two fastest supercomputers of India. They are used for?

- A. Weather Forecasting
- B. Quantum Calculations
- C. Big Data
- D. All of the above

Answer: A

Explanation

- Pratyush is India's fastest supercomputer. It has capacity of 4.0 Petaflops (PF) whereas Mihir has a capacity of 2.8 PF
- A petaflop is a measure of a computer's processing speed and is equal to a quadrillion (thousand trillion) calculations per second
- India's ministry of earth sciences has claimed that its HPC system with a combined capacity of 8.0 Peta Flops placed India at the fourth position after Japan, UK and USA for dedicated HPC resources for weather/climate community
- The HPC system would help improve the quality of forecasts of monsoon, extreme events, cyclones and earthquakes as well as air quality, lightning, fishing, hot and cold waves and flood and drought

102. Government of India has notified new energy performance standards for Room Air Conditioners. The default temperature setting is mandated at

- A. 21°
- B. 22°
- C. 23°
- D. 24°

Answer: D

Explanation

- The Central Government in consultation with the Bureau of Energy Efficiency (BEE) has notified new energy performance standards for Room Air Conditioner (RACs)
- The 24°C default setting has been made mandatory from Jan 1, 2020 for all room air conditioners covered under the ambit of BEE star-labelling program
- BEE launched the voluntary star labelling program for fixed-speed room air conditioners (RACs) in 2006, and this program became mandatory on 12th January 2009
- BEE is a statutory body under the Ministry of Power, Government of India

103. Which of the following statement(s) is/are true in the context of Nitinol, a material developed by CSIR-NAL?

1. It is a super rigid material that can be used in flow diverter stent
2. Flow diverters also promote healing of the blood vessel wall

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: B

Explanation

- Nitinol, a super elastic alloy with shape memory was acquired from National Aero Space Laboratories, Bengaluru (CSIR-NAL). When the device is deployed at the site, it is released from its crimped locked position and assumes the desired and originally designed shape because of the shape memory property of Nitinol.
- Flow diverters have the advantages of being flexible and adaptable to the shape and course of the vessel. Also flow diverters promote healing of the vessel wall by removing the constant stress of blood flow on it.

104. Which of the following disease is/are zoonotic disease?

1. Kyasanur Forest Disease

2. Zika
3. Ebola
4. Anthrax

Select the Correct Option

- A. All except 1
- B. All except 3
- C. 1 and 3 only
- D. All of the above

Answer: D

105. Preservation of umbilical cord for future use is known as

- A. Cord Blood Banking
- B. Cord Cell Banking
- C. Umbilical Blood Banking
- D. None of the above

Answer: A

Explanation

- Cord blood banking involves taking the umbilical cord blood, which is a rich source of stem cells, and preserving it for future use
- Indian Council of Medical Research (ICMR) does not recommend commercial stem cell banking. It says so far there is no scientific basis for preservation of cord blood for future self use and this practice therefore raises ethical and social concerns
- Private storage of the cord blood is advisable when there is an elder child in the family with a condition treatable with these cells and the mother is expecting the next baby. In other situations, parents should be educated about the limitations of banking at this point of time

106. Which of the following statements in the context of Methanotrophs are incorrect?

1. They are methane producing bacteria
2. They consume carbondioxide to produce methane

Select the Correct Option

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: C

Explanation: They are methane-utilising bacteria that convert methane into carbon-dioxide

107. RaiDer-X, recently in news is best described by which of the following?

- A. New explosive detection device
- B. Glide bomb
- C. Radiation detection device
- D. None of the above

Answer: A

Explanation

- It is a new explosive detection device, that has the capability to detect explosive from a stand-off distance
- The data library can be built in the system to expand its capability to detect a number of explosives in pure form as well as with the contaminants
- Bulk explosive in concealed condition can also be detected by the device
- RaiDer-X has been co-developed by High Energy Materials Research Laboratory (HEMRL) Pune and Indian Institute of Science, Bangalore