



Fact Sheet Prep Series Part - 5

ANSWER KEY WITH EXPLANATION

GENERAL SCIENCE

1. Ans. a

Related Information - Algae are green in colour. They contain chlorophyll which gives them the green colour. Algae can also prepare their own food by photosynthesis.

2. Ans. d

Extra Information - The food components gradually tract get digested as food travels through the various compartments. The inner walls of the stomach and the small intestine, and the various glands such as salivary glands, the glands liver and the liver pancreas secrete digestive juices. The digestive juices convert complex substances of food into simpler ones. The digestive tract and the associated glands together constitute the digestive system.

3. Ans. a

4. Ans. a

Explan - Viruses will contain either DNA or RNA as their genetic material. Viruses can be further classified by whether or not they have single or double stranded DNA or single or double stranded RNA. A virus particle will contain DNA or RNA, but not both.

5. Ans. a

Explan - What is drug-resistant TB?

Tuberculosis, caused by Mycobacterium tuberculosis, is one of the most common communicable diseases in India, its transmission fuelled by unhygienic, crowded living conditions.

If the bacterium is exposed to a non-lethal dose of antibiotics combination — which can happen if a patient starts a course of medication but does not finish it — it can become unresponsive to those antibiotics. The infection is then said to have become drug resistant.

How bad can this condition get?

Depending on responsiveness to basic and advanced antibiotics — referred to in medical parlance as first-, second-, and third-line drugs — drug resistant TB is classified as ‘multi-drug resistant’ (MDR), ‘extensively drug resistant’ (XDR) and, recently, ‘totally drug resistant’ (TDR). MDR TB is resistant to at least two of the first line TB drugs, Isoniazid and Rifampicin. When in addition, it is also resistant to fluoroquinolones and at least one of three injectable second-line drugs, viz., Amikacin, Kanamycin and Capreomycin, the infection is categorised as XDR. TDR shows resistance to all tested first- and second-line drugs — Isoniazid, Rifampicin, Streptomycin, Ethambutol, Pyrazinamide, Ethionamide, para-aminosalicylic acid, Cycloserine, Ofloxacin, Amikacin, Ciprofloxacin, Capreomycin and Kanamycin.

What are the possible sites of TB infection in the body?

While pulmonary or lung TB is the commonest and most virulent form of the disease, the bacterium can, in fact, infect a vast range of organs in the body, including the brain, bones, lymph nodes, spinal cord and abdomen. These forms of TB are not as contagious as pulmonary TB, though many of them have a prior history of lung infection. Non-pulmonary tuberculosis is also difficult to diagnose, because there are no clear-cut guidelines.

How common is drug resistant TB in India?

According to WHO data, in 2013, a total 14,15,617 cases of TB were notified, some of which were relapses and, therefore, strong suspects for drug-resistance. Of the new cases, 2.2% were of MDR TB.

A total of 20,763 patients were started on MDR TB



treatment that year. Consolidated prevalence data for XDR TB is harder to find, but reviews in various institutes found 2.4%-5% of MDR cases could turn out to be XDR. Incidence figures for TDR TB are not available.

How is India tackling drug-resistant TB?

Directly Observed Treatment, Short Course (DOTS) has been India's most effective weapon. While treatment must continue for between 6 months and two years, as both results and side-effects — such as impaired liver function — start to show within a month or two, some patients discontinue the medication.

Treatment is sometimes also interrupted due to factors such as poverty and unemployment. The DOTS strategy ensures that patients are diagnosed and treated effectively until they are cured, by ensuring the availability of the full course of drugs, and by monitoring patient compliance.

The medicine is administered in the presence of a health worker. The effort has been to get patients from private practitioners to government health centres.

6. Ans. a

7. Ans. d

8. Ans. b

Related Information - Most plants have roots, stems and leaves. These are called the vegetative parts of a plant. Since reproduction is through the vegetative parts of the plant, it is known as vegetative propagation.

9. Ans. b

Explan - A moderator is a medium that reduces the speed of fast neutrons, thereby turning them into thermal neutrons capable of sustaining a nuclear chain reaction involving uranium-235 or a similar fissile nuclide. So, by this definition moderators should not be used in fast breeder reactors, as they work on fast moving neutrons. Moderators are required in other types of nuclear reactor. Even if you just apply common sense, you can eliminate fast breeder reactor and come to the answer.

10. Ans. c

Explan - Vitamin A deficiency causes Night Blindness.

- Vitamin C deficiency causes Scurvy.
- Vitamin D deficiency causes Rickets.
- Vitamin B1 deficiency causes Beriberi.

11. Ans. b

Explan - Exothermic process (exo- : "outside") describes a process or reaction that releases energy from the system, usually in the form of heat, but also in a form of light (e.g. a spark, flame, or flash), electricity (e.g. a battery), or sound (e.g. explosion heard when burning

hydrogen). Its etymology stems from the Greek prefix ex?, which means "outwards") and the Greek word thermik?s, which means "thermal").

12. Ans. d

13. Ans. c

Explan - Micro-organisms may be single-celled like bacteria, some algae and protozoa, or multi-cellular, such as algae and fungi. They can survive under all types of environment, ranging from ice cold climate to hot springs and deserts to marshy lands. They are also found inside the bodies of animals including humans. Some microorganisms grow on other organisms while others exist freely. Microorganisms like amoeba can live alone, while fungi and bacteria may live in colonies.

14. Ans. c

15. Ans. a

Explan - They are not affected by electro-magnetic forces but are affected by weak forces like gravity. The most important source of its generation is sun. Neutrinos do not carry any electric charge, which means that they are not affected by the electromagnetic force that acts on charged particles, and are leptons, so they are not affected by the strong force that acts on particles inside atomic nuclei. Neutrinos are therefore affected only by the weak subatomic force and by gravity.

16. Ans. c

Explan - In Prokaryotic cell, each cell has only one chromosome.

17. Ans. c

Explan - Adrenal glands also produce the hormone adrenalin. It helps the body to adjust to stress when one is very angry, embarrassed or worried. Thyroid and adrenals secrete their hormones when they receive orders from the pituitary through its hormones. Pituitary glands also secrete growth hormone which is necessary for the normal growth of a person.

18. Ans. d

Explan - New traits introduced to crop plants by genetic engineering have the potential to increase crop yields, improve agricultural practices, or add nutritional quality to products. For example, transgenic crop plants capable of degrading weed killers allow farmers to spray weeds without affecting yield. Use of herbicide - tolerant crops may also allow farmers to move away from pre-emergent herbicides and reduce tillage, thereby decreasing soil erosion and water loss. Transgenic plants that express insecticidal toxins resist attacks from insects. Crops engineered to resist insects are an alternative to sprays, which may not reach all parts of the plant. They are also cost effective, reducing the use of synthetic insecticides.



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Genetic engineering has also been used to increase the nutritional value of food; “golden rice” is engineered to produce beta - carotene, for example. Edible vaccines, present in the plants we eat, may be on the horizon.

19. Ans. a

Explan - Escape velocity on earth = 11.16 km/second. Escape velocity on moon is less than the earth, because gravity of moon is less than (1/6) that of the earth so, less effort is required to leave the atmosphere.

20. Ans. c

Explan - Least distance of distinct vision is 25 cm. Myopia is short sightedness in which image is formed before retina to correct it, concave lens is used.

21. Ans. d

Explan - Isotope are two or more forms of the same element that contain equal numbers of protons but differs in the numbers of neutrons in their nuclei. Isotope are two or more forms of the same element that contain equal numbers of protons but differs in the numbers of neutrons in their nuclei.

Allotropes are different structural modifications of an element; the atoms of the element are bonded together in a different manner.

22. Ans. d

Related Information - Pathogens enter our body through the air we breathe, the water we drink or the food we eat. They can also get transmitted by direct contact with an infected person or carried through an animal. Microbial diseases that can spread from an infected person to a healthy person through air, water, food or physical contact are called communicable diseases.

23. Ans. d

24. Ans. c

Explan - Plants like cuscuta are parasites. They take food from the host plant.

25. Ans. b

Explan - Not 50% but these six elements comprise 99% of mass of human body.

26. Ans. a

Explan - Bones store calcium but doesn't secrete it.

27. Ans. d

Explan - Malnutrition caused by deficiencies of vitamins and minerals is also known as “hidden hunger”, because most of the people affected by it do not show the physical symptoms usually associated with hunger and malnutrition. So, zinc, iodine and vitamin B is the answer.

Fat is a macro nutrient.

28. Ans. a

Extra Information - The Golgi apparatus, first described by Camillo Golgi, consists of a system of membrane-bound vesicles arranged approximately parallel to each other in stacks called cisterns. These membranes often have connections with the membranes of ER and therefore constitute another portion of a complex cellular membrane system.

29. Ans. d

Related Information - Edward Jenner discovered the vaccine for smallpox in 1798. It is essential to protect all children against the diseases. Necessary vaccines are available in the nearby hospitals. A worldwide campaign against smallpox has finally led to its eradication from most parts of the world.

30. Ans. d

31. Ans. b

Explan - Enteric fermentation in cattle produces methane and not carbon monoxide. Carbon monoxide (CO) is a deadly, colorless, odorless, poisonous gas. It is produced by the incomplete burning of various fuels, including coal, wood, charcoal, oil, kerosene, propane, and natural gas. Products and equipment powered by internal combustion engines such as portable generators, cars, lawn mowers, and power washers also produce CO.

32. Ans. d

33. Ans. c

Explan - Both starch and cellulose are polymers. Starch is polymer of glucose molecules with α -(1,4) and α -(1,6) linkages (Amylose and Amylopectin), while cellulose is a polymer of while cellulose is a polymer of glucose molecules with β -(1,4) linkages.

34. Ans. a

Explan - Insulin is a hypoglycemic hormone. It enhances the utilization of glucose. It helps conversion of glucose to glycogen in the liver and the skeletal muscles, so it lowers the sugar levels in the blood.

35. Ans. c

Explan - One type of cells are the red blood cells (RBC) which contain a red pigment called haemoglobin which bind with oxygen and transports it to all the parts of the body and ultimately to all the cells. It will be difficult to provide oxygen efficiently to all the cells of the body without haemoglobin. The blood also has white blood cells (WBC) which fight against germs that may enter our body.

36. Ans. c



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Explan - The correctly matched pair's are-

- A. Bowman's Capsule - Kidney
- B. A.V. Valves - Heart
- C. Cerebellum - Brain
- D. Alveoli - Lungs

37. Ans. d

Related Information - Blood is a liquid, which has cells of various kinds suspended in it. The fluid part of the blood is called plasma.

38. Ans. c

Explan - Ascariasis is an infection caused by *Ascaris lumbricoides*, which is one species of roundworm. It is not a genetic disease.

An inherited condition, cystic fibrosis affects the cells that produce mucus, sweat and digestive juices. These secreted fluids are normally thin and slippery. But in cystic fibrosis, a defective gene causes the secretions to become thick and sticky. Instead of acting as a lubricant, the secretions plug up tubes, ducts and passageways, especially in the lungs and pancreas.

Hemophilia is a bleeding disorder that slows down the blood clotting process. People who have hemophilia often have longer bleeding after an injury or surgery. The two types of hemophilia (A and B) are caused by permanent gene changes (mutations) in different genes.

39. Ans. a

Explan - Diseases like dysentery and malaria are caused by protozoans whereas typhoid and tuberculosis (TB) are bacterial diseases.

40. Ans. d

Related Information - The cell theory was further expanded by Virchow (1855) by suggesting that all cells arise from pre-existing cells. With the discovery of the electron microscope in 1940, it was possible to observe and understand the complex structure of the cell and its various organelles.

41. Ans. c

42. Ans. d

43. Ans. c

Explan - Abscisic acid is a growth inhibitor. Cytokinins help in cell division and Auxins saves the crop from falling.

44. Ans. b

Explan - Permanent hardness cannot be removed by boiling.

Lime (calcium hydroxide – Ca(OH)_2) and soda ash (sodium carbonate – Na_2CO_3) is added to the water causing CaCO_3 and Mg(OH)_2 to precipitate out.

Addition of caustic soda (NaOH) removes both temporary and permanent hardness by precipitating the metal ions which cause the hardness as insoluble hydroxides.

Permanent hardness can be removed by distillation where steam is condensed into a liquid

45. Ans. c

Explan - Gunpowder, also known as black powder, is a chemical explosive. It is a mixture of sulfur, charcoal, and potassium nitrate (saltpeter or nitre)

46. Ans. d

Related Information - Carbohydrates, proteins, fats, vitamins and minerals are components of food. These components of food are necessary for our body and are called nutrients.

47. Ans. b

Explan - Lactase is an enzyme released in small intestine, it converts lactose into glucose and galactose.

48. Ans. b

Explan - Blood and muscles are both examples of tissues found in our body. Blood is a type of connective tissue, and muscle forms muscular tissue.

49. Ans. c

50. Ans. a

Explan - The correct sequence in development is - Fertilization - Zygote - Cleavage - Morula - Blastula - Gastrula.

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