



QUADSPARKS



SAMPLE QUESTIONS

1. This rare disease was nicknamed after a pioneer scientist who suffered from it. He is believed to have been a muse for multiple 17th-century paintings, such as the one pictured, by the Dutch artist Vermeer. This disease is also nicknamed after an art form as it causes an uncontrolled movement of the front part of the body between chest and waist in its patients. **Which art form is being mentioned here, and which notable biologist lent his name to the disease?**



2. In 1944, an Austrian physicist famous for his equation in Quantum mechanics stated that an "aperiodic" crystal is the basis for genetic information in living cells, later named A. It motivated two scientists, B and C, who proposed the structure of A in 1954. Identify A, B & C.

Hint: There exists another molecule, say D, equally important for the genetic transmission of data, which differs from A only by the presence of an additional hydroxyl group.

3. The X scale is a popular qualitative scale of ordinal numbers used to assess a particular property based on relative merit. Other scales used for assessments of the same property include the more standardized Vickers scale, the Rosiwal scale (which uses a known load as an improvement to X), and the Brinell scale (which uses penetration by an indenter to characterize the property). X was named after Friedrich X, who also worked on classifying crystal forms in addition to his most famous contribution. Identify X.
4. Carcinization is an example of convergent evolution observed in crustaceans (mainly in the infraorder Anomura). The process "consists essentially in a reduction of the abdomen of a macrurous crustacean, together with a depression and broadening of its cephalothorax" (*Lancelot Alexander Borradaile, 1916*). What body form does this process lead to?
5. A long thin filament of dense gas connecting two of the arms of the Milky Way galaxy was discovered recently by a group of astronomers, including Indian scientist VS Veena. What 'Indian' geographical entity's name was given by her to this newly discovered structure that connects two arms of the Milky Way Galaxy or 'Akash Ganga'?
6. In the 1950s, this scientist worked at Cornell University, where he built heart monitors for veterinary research. One day, he accidentally inserted a resistor of lower impedance into the circuit, which immediately began to emit an electrical pulse cyclically. This mistake saves millions of lives at present! A company of this scientist used to make batteries for 90% of this instrument. Who is the scientist, and which instrument?
7. This flower, the national emblem of a particular region, shares the name with a well-known instrument in our school science lab and appears in the logo of a famous publication with a history of more than 250 years. It is an essential source of nectar for many pollinators. Even some ecological organizations raise awareness about their benefits because of the common notion that this is an unwanted weed. What is the name of this flower? Also, identify the popular publication.
8. There is a famous tiling system named after a British mathematician, that uses the fact that it is possible to create infinitely large nonrepeating patterns. This system uses blocks that have their areas linked to a certain famous 'beautiful' number. What is that number?

Answers

1. The art form being mentioned here is "St. Vitus dance" (also known as "chorea"), and the notable biologist who lent his name to the disease is George Huntington. The disease is called "Huntington's disease" or "Huntington's chorea".
2. A is DNA (Deoxyribonucleic acid), B is James Watson, and C is Francis Crick. The Austrian physicist who made the statement about an aperiodic crystal was Erwin Schrödinger, who is famous for his work on quantum mechanics and the Schrödinger equation.
3. X refers to Mohs scale of mineral hardness, which is named after Friedrich Mohs. Mohs was a German mineralogist who is best known for his work on classifying crystal forms and developing the Mohs scale of mineral hardness.
4. The process of carcinization in crustaceans leads to the evolution of a body form that is similar to that of a crab.
5. The name given to the astronomical entity is Gangotri.
6. The scientist in question is Wilson Greatbatch, and the instrument is the implantable cardiac pacemaker.
7. The flower in question is the thistle, which is the national emblem of Scotland. The name "thistle" is also used for a common laboratory instrument, which is used to heat or mix small quantities of liquids. The thistle appears in the logo of the famous publication "The Economist," which has a history of more than 250 years.
8. The famous 'beautiful' number associated with the Penrose tiling system named after British mathematician Roger Penrose is the golden ratio, denoted by the Greek letter phi (ϕ) and with an approximate value of 1.6180339887.
