Manzoor Illahi GSA Mock Test
Batch: 62

__/__/ 2025

QNo2

(A)

Dengue

Dengue is a viral infection which spread by ~~so~~ mosquitoes, specially Aedes aegypti and Aedes albopictus. The disease is caused by the dengue virus (DENV-4) each serotyp can cause illness, meaning a person can potentially be infected up to four times.

Symptoms

Dengue symptoms appear 4-10 days after a mosquito bite and can vary from mild to ~~severe~~ severe. Its common types are high fever, severe headache, pain behind the eyes, muscle, joint, and bone pain, nausea and vomiting, swollen glands and rash. Severe cases, know as dengue hemorrhagic fever or severe dengue, can lead to life-threatening complications like bleeding plasma leakage, and organ failure, requiring immediate medical care.

Causative Agent of Dengue

The causative agent of dengue virus (DENV), which belongs to the Flavivirus genus. There are four distinct but closely related serotype of this virus: DENV-1, DENV-1, DENV-2, DENV-3, and DENV-4. Each serotype can cause dengue fever, and infection.

(B) Dark Matter and Dark Energy

Dark matter and dark energy are two mysterious components of the universe that scientists believe make up about 95% of its total content, yet they remain largely unexplained.

Dark Matter

Dark matter is a form of matter that doesnot emit, absorb, or reflect light, making it invisible and detectable only through its gravitational effects on visible

matter, radiation, and the structure of the universe. It is believed to make up about 27% of the universe. Despite numerous theories, the exact composition of dark matter remains unknown, though it is thought to be made of hypothetical particles that don't interact with ordinary matter.

Dark Energy

Dark energy is an even more mysterious force, though to make up about 68% of the universe. It is theorized to be responsible for the accelerated expansion of the universe. Observations show that galaxies are moving away from eachother at an increasing rates suggesting the presence of a repulsive force countering gravity. One hypothesis is that it could be related to cosmological constant. A term Albert Einstein

introduced in his equation. Another theory about it is 'quintessence' However, like dark matter dark energy remains one of the unsolved mysteries in physics.

C

Mitochondria

Mitochondria are very important organelles. They are present only in Eukaryotic cells. They involve in manufacturing and supply of energy to the cell. Therefore it is called power house of the cell.

Structure of Mitochondria

The mitochondria may be vesicle rod or filament shaped. It is bounded by two membranes. The outer membrane is smooth. The inner membrane forms many infoldings, called cristae. The inner surface of cristae contains small knob like structure, called F1 particles. These particles (F1) are

suspended inside the matrix.

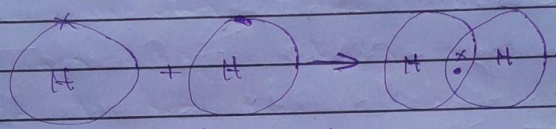
Function of Mitochondria and Power house of Cell.

Many important metabolic processes take place in mitochondria. These are Krebs cycle, aerobic respiration, fatty acid metabolism, etc. Energy is released from organic food during these metabolic processes. This energy to cell on demands and ATP is broken to ADP. This ADP absorbs energy from mitochondria and again becomes ATP. Therefore, it is also called powerhouse of the cell.

(D) Covalent Bond

When two non-metal atoms combine, they share one or more pairs of electrons. A pair shared of electrons is called a single covalent bond or bond pair. A single covalent bond, in the diatomic hydrogen

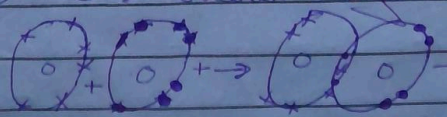
molecule. For example, for attaining the nearest noble gas configuration, each hydrogen atom shares its valence electron with other hydrogen atom and form a covalent bond in hydrogen molecule.



Q No 5 (A.)

Multiple Covalent Bonds:

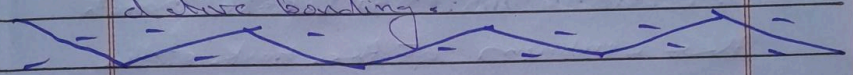
Some atoms can bond together by sharing two pairs of electrons. We call this double covalent bond. This is represented by a double line between the atoms. For example O=O. The dot and cross diagrams for oxygen and Carbon dioxide all of which have double covalent bonds are shown figures below.



Two oxygen atoms (2,6) oxygen molecule.

Coordinate Covalent Bond

When shared pair of the electron comes from only one atom and not each from the two atoms involved in the bonding then it is called a coordinate covalent bonding.



Q No 5

(A)

Human Brain

The human brain is a complex organ that serves as the control center for the body. It coordinates everything from basic life functions to higher-level cognition, behaviors, and emotions. Structurally, it is made up of several regions, each with specialized roles.

Structure of Human Brain

1. Cerebrum: It is the largest part of the brain, divided into two hemisphere (left & right) and further divide into

four lobes: frontal, parietal, temporal, and occipital. Function of cerebrum is responsible for higher-order functions, including reasoning, emotions, movement, and sensory processing.

2. **Cerebellum**: It is located beneath the cerebrum at the back of the brain. Its function is to coordinates fine motor movement, balance, and posture. It helps in smooth, precise movement and maintains muscle tone.

3. **Brainstem**: It connects the brain to the spinal cord and comprises the midbrain, pons, and medulla oblongata. It functions such as breathing, heart rate, and blood pressure. It also regulates reflexes and connects motor and sensory pathways between the body and brain.

P.T.O

Why brain is called Control Center

The brain is known as the control center because it oversees and coordinates nearly every activity in the body. It processes sensory information, generates motor responses, and controls complex functions like thinking, memory, emotions, and behaviour. Through the nervous system, the brain communicates with all the parts of the body, directing and regulating essential processes required for survival and interaction with environment. So that, it is called control center.

(B) (DRM)

DRM stand for digital Rights Management (DRM). It refers to technologies and strategies that control how digital content such as music, movies, e-books,

and software is accessed, used, and distributed. DRM is designed to protect intellectual property by preventing unauthorized copying, sharing or altering of digital media, ensuring that content creators and distributors retain control over their products.

DRM in Pakistan

In Pakistan DRM is still evolving with several major challenges:

1. **Piracy and Unauthorized Distribution:** Pakistan has a high rate of digital piracy, particularly for movies, software, and music. Content is frequently copied, shared, and distributed illegally often because legal digital content can be expensive or difficult to access. As a result, content creators and copyright holders lose revenue, making DRM crucial in local market

(2) Lack of Awareness and Enforcement: Many consumers and even content creators in Pakistan may not fully understand DRM or the importance of intellectual property rights. Enforcement of existing copyright laws can be weak, often due to limited resources and a lack of infrastructure for monitoring online piracy and illegal downloads.

(3) Streaming Services and DRM
Global streaming platforms like Netflix, Spotify, and Amazon Prime use DRM technologies in Pakistan to protect their content from being pirated.

(4) Challenges with Local Content
There is an increasing amount of local digital content - such as music, movies, and online courses. DRM adoption is limited among local creators due to high costs, lack of knowledge, and challenges in implementation.

Protecting local content through DRM would be beneficial but it need a more robust understanding and infrastructure.

5. Policy and Legal Frame Work:

Pakistan has laws related to intellectual property protection, such as the Copyright Ordinance of 1962, which theoretically covers digital content. However, adapting these laws to meet the needs of modern DRM technologies remains a challenge, and enforcement often lags.

C. Fat-Soluble Vitamins: These are that dissolve in fat or oils allowing them to be stored in the body's fatty tissues and liver for longer periods than water-soluble vitamins. The vitamins include vitamin A, D, E, K.

① Vitamin A: Essential for vision, immune function, and skin health. It also plays a role in cell growth and reproduction. It found in carrots, sweet potatoes, and leafy greens.

② Vitamin D: It is known as the sunshine vitamin, it helps the body absorb calcium, promoting bone health and immune function.

③ Vitamin E: It acts as an antioxidant, protecting immune function and skin health and found in nuts, seeds and vegetable oils.

④ Vitamin K: Vital for blood clotting and bone metabolism. It helps prevent excessive bleeding and is present in leafy green vegetables, broccoli etc.

تاریخ: __/__/__

- **Internet Standards:** These are technical specifications and guidelines that ensure the interoperability, reliability, and functionality of the Internet. They are established to create consistency across the diverse systems, networks, and devices that form the global internet infrastructure, enabling seamless communication and data exchange.

Key Aspects of Internet Standards

1. IP (Internet Protocol)
2. TCP (Transmission Control protocol.
3. HTTP (Hyper text transfer Protocol)
4. SMTP (Simple Mail Transfer Protocol).