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PUPKAR'S

TEACHER ELIGIBILITY TEST

Environmental Studies

(For Classes I-V)

Dr. Shyam Anand

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By

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Our Body

The **human body** is the entire structure of a human organism, and consists of a head, neck, torso, two arms and two legs. By the time the human reaches adulthood, the body consists of close to 100 trillion cells, the basic unit of life. These cells are organised biologically to eventually form the whole body.

HEALTH

Health is the level of functional and (or) metabolic efficiency of a living being. In humans, it is the general condition of a person in mind, body and spirit, usually meaning to being free from illness, injury or pain (as in "*good health*" or "*healthy*"). The World Health Organization (WHO) defined health in its broader sense in 1946 as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." Although this definition has been subject to controversy, in particular as having a lack of operational value and the problem created by use of the word "complete", it remains the most enduring. Classification systems such as the WHO Family of International Classifications, which is composed of the International Classification of Functioning, Disability and Health (ICF) and the International Classification of Diseases (ICD), are commonly used to define and measure the components of health.

The maintenance and promotion of health is achieved through different combination of physical, mental, and social well-being, together sometimes referred to as the *"health triangle"*. The WHO's 1986 *Ottawa Charter for Health Promotion* furthered that health is not just a state, but also "a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities."

Systematic activities to prevent or cure health problems and promote good health in humans are delivered by health care providers. Applications with regard to animal health are covered by the veterinary sciences. The term "healthy" is also widely used in the context of many types of non-living organizations and their impacts for the benefit of humans, such as in the sense of healthy communities, healthy cities or healthy environments. In addition to health care interventions and a person's surroundings, a number of other factors are known to influence the health status of individuals, including their background, lifestyle, and economic and social conditions; these are referred to as "determinants of health".

CLEANLINESS

Cleanliness is the absence of dirt, including dust, stains, bad smells and garbage. Cleanliness includes criteria such as health and beauty. The term Cleanliness derives from the meaning absence of odour, avoidance of and to avoid the spreading of dirt and contaminants to oneself and others. In the case of glass objects such as windows or windshields, the purpose can also be transparency. Washing is one way of achieving cleanliness, usually with water and often some kind of soap or detergent. In more recent times, since the germ theory of disease, it has also come to mean an absence of germs and other hazardous materials. However, dirt may play a useful role in our immune systems. This shift in thinking can be traced back to 1989, when David Strachan put forth the "hygiene hypothesis" in the *British Medical Journal*. Strachan looked at the records of 17,000 British children and found that the greater number of older siblings they had, the less likely they were to come down with hay fever—a disease which, despite its name, is far more common in the city than the

country. Strachan wondered if the older children were bringing home more viral infections to their younger siblings, priming their immune systems so they could better tolerate pollen. The "hygiene hypothesis" has now been linked with asthma, allergies, intestinal diseases including Crohn's disease, childhood leukemia and atopic dermatitis. There is increasing evidence that the less germs people are exposed to as a child, the more likely they are to get sick as adults.

Cleanliness impacts every phase of social interaction, generating potentially profound health-related risks and illnesses.

BODY PARTS

External Body Parts :

ankles	back	belly	breasts
buttocks	cheeks	chin	ears
elbows	eyes	fingers	feet
forehead	hair	hands	head
hips	knees	legs	lips
mouth	neck	nose	shoulders
thighs	toes	tongue	

Internal Body Parts :

Arteries	Bladder	Blood vessel	
Bone	Brain	Colon	Esophagus
Heart	Intestines	Kidneys	
Liver	Lungs	Muscle	Nerves
Ribs	Spine	Stomach	Tendon
Throat	Tongue	Teeth	Windpipe

BONES

An adult human has approximately 206 distinct bones :

- Spine and vertebral column (26)
- Cranium (8)
- Face (14)
- Hyoid bone, sternum and ribs (26)
- Upper extremities (70)
- Lower extremities (62)

MUSCLES

Muscle (from Latin *musculus*, diminutive of *mus* "mouse") is a contractile tissue of animals and is derived from the mesodermal layer of embryonic germ cells. Muscle cells contain contractile filaments that move past each other and change the size of the cell. They are classified as skeletal, cardiac, or smooth muscles. Their function is to produce force and cause motion. Muscles can cause either locomotion of the organism itself or movement of internal organs. Cardiac and smooth muscle contraction occurs without conscious thought and is necessary for survival. Examples are the contraction of the heart and peristalsis which pushes food through the digestive system. Voluntary contraction of the skeletal muscles is used to move the body and can be finely controlled. Examples are movements of the eye, or gross movements like the quadriceps muscle of the thigh. There are two broad types of voluntary muscle fibers: slow twitch and fast twitch. Slow twitch fibers contract for long periods of time but with little force while fast twitch fibers contract quickly and powerfully but fatigue very rapidly.

SENSE ORGANS

Traditionally, there are five senses: sight, smell, taste, touch, and hearing. As far back as the 1760's, the famous philosopher Immanuel Kant proposed that our knowledge of the outside world depends on our modes of perception. In order to define what is "extrasensory" we need to define what is "sensory". Each of the 5 senses consists of organs with specialized cells that have receptors for specific stimuli. These cells have links to the nervous system and thus to the brain. Sensing is done at primitive levels in the cells and integrated into sensations in the nervous system. Sight is probably the most developed sense in humans, followed closely by hearing.

DIGESTION

Digestion is the mechanical and chemical breakdown of food into smaller components that are more easily absorbed into a blood stream, for instance. Digestion is a form of catabolism: a breakdown of large food molecules to smaller ones.

In mammals, food enters the mouth, being chewed by teeth, with chemical processing beginning with chemicals in the saliva from the salivary glands. This is called mastication. Then it travels down the esophagus into the stomach, where hydrochloric acid kills most contaminating microorganisms and begins mechanical break down of some food (e.g., denaturation of protein), and chemical alteration of some. The hydrochloric acid also has a low pH, which allows enzymes to work more efficiently. After some time (typically an hour

or two in humans, 4–6 hours in dogs, somewhat shorter duration in house cats, ...) , the resulting thick liquid is called chyme. Chyme will go through the small intestine, where 95% of absorption of nutrients occurs, through the large intestine, and are eliminated during defecation.

Other organisms use different mechanisms to digest food.

RESPIRATORY SYSTEM

In humans and other animals, the anatomical features of the **respiratory system** include airways, lungs, and the respiratory muscles. Molecules of oxygen and carbon dioxide are passively exchanged, by diffusion, between the gaseous external environment and the blood. This exchange process occurs in the alveolar region of the lungs.

Other animals, such as insects, have respiratory systems with very simple anatomical features, and in amphibians even the skin plays a vital role in gas exchange. Plants also have respiratory systems but the directionality of gas exchange can be opposite to that in animals. The respiratory system in plants also includes anatomical features such as holes on the undersides of leaves known as stomata.

NERVOUS SYSTEM

The **nervous system** is an organ system containing a network of specialized cells called neurons that coordinate the actions of an animal and transmit signals between different parts of its body. In most animals the nervous system consists of two parts, central and peripheral. The central nervous system of vertebrates (such as humans) contains the brain, spinal cord, and retina. The peripheral nervous system consists of sensory neurons, clusters of neurons called ganglia, and nerves connecting them to each other and to the central nervous system. These regions are all inter-connected by means of complex neural pathways. The enteric nervous system, a subsystem of the peripheral nervous system, has the capacity, even when severed from the rest of the nervous system through its primary connection by the vagus nerve, to function independently in controlling the gastrointestinal system.

Neurons send signals to other cells as electrochemical waves travelling along thin fibers called axons, which cause chemicals called neurotransmitters to be released at junctions called synapses. A cell that receives a synaptic signal may be excited, inhibited, or otherwise modulated. Sensory neurons are activated by physical stimuli impinging on them, and send signals that inform the central nervous system of the state of the body and the external environment. Motor neurons, situated either in the central nervous system or in peripheral ganglia, connect the nervous system to muscles or other effector organs. Central neurons, which in vertebrates greatly outnumber the other types, make all of their input and output connections with other neurons. The interactions of all these types of neurons form neural circuits that generate an organism's perception of the world and determine its behavior. Along with neurons, the nervous system contains other specialized cells called glial cells (or simply glia), which provide structural and metabolic support.

Nervous systems are found in most multicellular animals, but vary greatly in complexity. Sponges have no nervous system, although they have homologs of many genes that play crucial roles in nervous system function, and are capable of several whole-body responses, including a primitive form of locomotion. Placozoans and mesozoans—other simple animals that are not classified as part of the subkingdom Eumetazoa—also have no nervous system. In Radiata (radially symmetric animals such as jellyfish) the nervous system consists of a simple nerve net. Bilateria, which include the great majority of vertebrates and invertebrates, all have a nervous system containing a brain, one central cord (or two running in parallel), and peripheral nerves. The size of the bilaterian nervous system ranges from a few hundred cells in the simplest worms, to on the order of 100 billion cells in humans. Neuroscience is the study of the nervous system.

EXCRETORY SYSTEM

The **excretory system** is a passive biological system that removes excess, unnecessary or dangerous materials from an organism, so as to help maintain homeostasis within the organism and prevent damage to the body. It is responsible for the elimination of the waste products of metabolism as well as other liquid and gaseous wastes. As most healthy functioning organs produce metabolic and other wastes, the entire organism depends on the function of the system; however, only the organs

specifically for the excretion process are considered a part of the excretory system. The excretory system gets rid of waste called urine or "pee".

CIRCULATORY SYSTEM

The **circulatory system** is an organ system that passes nutrients (such as amino acids, electrolytes and lymph), gases, hormones, blood cells, etc. to and from cells in the body to help fight diseases and help stabilize body temperature and pH to maintain homeostasis.

This system may be seen strictly as a blood distribution network, but some consider the circulatory system as composed of the **cardio-vascular system**, which distributes blood, and the **lymphatic system**, which distributes lymph. While humans, as well as other vertebrates, have a closed cardiovascular system (meaning that the blood never leaves the network of arteries, veins and capillaries), some invertebrate groups have an open cardio-vascular system. The most primitive animal phyla lack circulatory systems. The lymphatic system, on the other hand, is an open system.

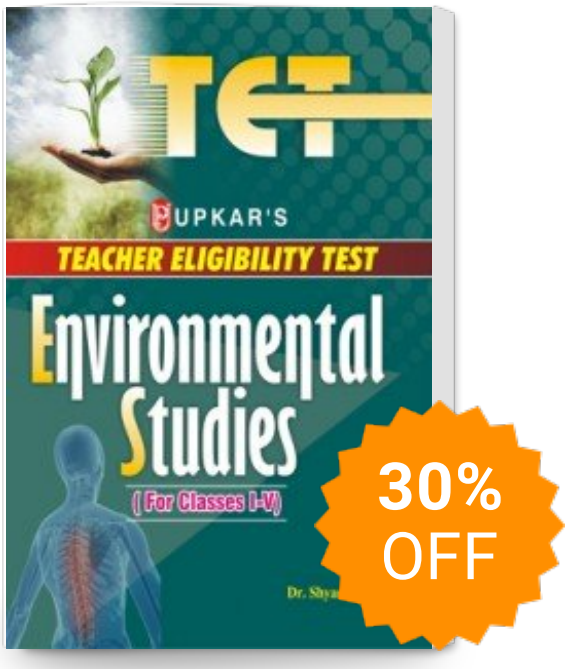
Two types of fluids move through the circulatory system: blood and lymph. The blood, heart, and blood vessels form the cardiovascular system. The lymph, lymph nodes, and lymph vessels form the lymphatic system. The cardiovascular system and the lymphatic system collectively make up the circulatory system.

FIRST AID

First aid is the provision of initial care for an illness or injury. It is usually performed by a non-expert person to a sick or injured person until definitive medical treatment can be accessed. Certain self-limiting illnesses or minor injuries may not require further medical care past the first aid intervention. It generally consists of a series of simple and in some cases, potentially life-saving techniques that an individual can be trained to perform with minimal equipment.

While first aid can also be performed on all animals, the term generally refers to care of human patients.

Teacher Eligibility Test Environmental Studies (For Classes I-V)



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