ANSWER KEY – UNIT 1 – ENGLISH

ANSWERS

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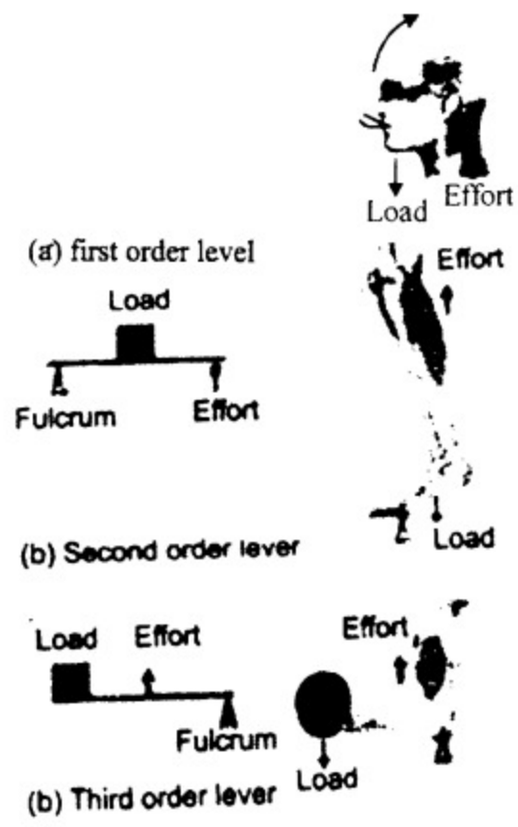
A lever is any rigid structure that runs about a fulcrum when force is applied. Levers are generally associated with machines but can also apply to human body. In the body, synovial joints usually serve as the fulcra (F), the muscles can provide force of effort (E), and the bones acts as the rigid lever arms that move the resisting object. There are three kinds of levers, determined by the arrangement of their pairs. In first order lever, the fulcrum is positioned between the effort and the resistance. In the human body the head at the atlanto-occipital joint, straightening of the elbow. In the second order lever, the resistance is positioned between the fulcrum and the effort. Contraction of the calf muscles (E) to elevate the body on the toes, with the ball of the foot acting as the fulcrum is an example in the human body. In the third order lever, the effort lies between the fulcrum and the resistance. The flexion of the elbow is an example.



Q20. Reason out the rigor mortis.

Answer

When death occurs, ATP is no longer made. It is a short-lived chemical and so it runs out fairly quickly. This causes the muscles to lock into position as cross-bridges that formed between actin and myosin filaments before death can no longer be broken. The skeletal muscles undergo a partial contraction the causes the joints to become fixed. This condition, rigor mortis (rigidity of death), happens in all body muscles. It appears about four hours after death and lasts about 34 hours. After this time muscles proteins are destroyed by enzymes within the cells and so rigor mortis disappears.

KEY POINTS

- The skeleton in animals contributes in upholding and sustaining the body against gravity and other external forces.
- The vertebrate skeleton is composed either of cartilage or bone.
- Cartilage consists of cells called chondrocytes and a tough, flexible matrix made of type II collagen and it is without blood vessels.
- Bone is a living hard and strong structure consisting of a hard ground substance or matrix and cells.
- Bones are composed of osteoblasts (cells that help from bone), and osteoclasts (cells that help eat away old bone) and osteocytes which are mature osteoblasts.

- Human skeleton consists of 206 individual bones which are grouped into two general divisions: axial skeleton, the basic framework of the body and appendicular skeleton, the extremities.
- The human skull is composed of 22 bones, besides 6 tiny ear bones and one hyoid bone.
- In human, there are 33 vertebrae. Seven cervical vertebrae, 12 thoracic vertebrae; 5 lumber vertebrae; 5 sacral vertebrae and at the end of the vertebral column is the coccyx or tail bone which consists of 4 small fused vertebrae.
- In humans there are twelve pairs of ribs, one pair articulating with each of the thoracic vertebrae forming a cage that encloses the heart and lungs.
- The appendicualr skeleton consists of pectoral girdles with forelimbs and pelvic girdle with hind limbs.
- The sites where two or more bones meet are called joints or articulations.
- Deformities of skeleton may be genetic, hormonal or due to the effects of nutrient deficiency.
- A fracture means broken bone.
- Simple fractures are those in which the skin in intact.
- Compound fracture is an open fracture: if the bone ends penetrate the skin and form a wound.
- A dislocated joint is a joint that slips out of place.
- Based on location, three types of muscles are skeletal, cardiac, and smooth.
- The skeletal muscle consists of muscles bundle, which are further composed of huge elongated cells called muscles fibre.
- The immediate source of energy for the muscle contraction is ATP, stored in the muscle cells. An enzyme ATPase, in the muscle cells breaks ATP to ADP, thus releasing energy for muscle contraction.
- Muscle fatigue is a condition of the muscle in which its capacity to produce maximum contraction is reduced even though the muscle still may be receiving stimuli.
- Muscle cramps are sudden, involuntary contractions or spasms in one or more muscles.
- Tetany is a symptom characterized by muscle cramps, spasms or tremors.
- Tetanus is a infection of the nervous system caused by a deadly bacteria Clostridium tetani.