

CBSE TEST PAPER-02
CLASS - XI BIOLOGY
(Locomotion and Movement)

General Instruction:

- All questions are compulsory.
 - Question No. 1 to 3 carry one marks each. Question No. 4 to 6 carry two marks each. Question No. 7 and 8 carry three marks each. Question No. 9 carry five marks.
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1. Name the tissue which connects muscles to the bone?
2. What is the function of myoglobin?
3. What causes fatigue of muscle fibers?
4. Which kinds of muscle fibers are richly found in the extensor muscles present on the back of human body? What characteristics enable those fibers to serve their purpose?
5. Give differences between red and white muscle fibers, other than color.
6. What are floating ribs? How many of them are there?
7. Represent diagrammatically a sarcomere and label its parts. Which of these parts shorten during muscle contraction?
8. Describe any three disorders of the muscular system.
9. Describe the various kinds of joint in human body. According to mobility giving one example of each.

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[ANSWERS]

Ans 01. Tendon is a non-elastic connective tissue which connects muscles to the bone.

Ans 02. Myoglobin stores oxygen in the red muscle fibres as oxymyoglobin, which helps in aerobic oxidation of the glucose in the muscles.

Ans 03. Lactic acid is produced in the muscles during intense exercise, as a metabolic by product of anaerobic respiration. This accumulates in the muscles and results in muscle fatigue.

Ans 04. Red muscle fibers are richly found in the extensor muscles present on the back of human body.

Characteristics:- They muscle fibres are rich in mitochondria, myoglobin, slow acting, no lactic acid accumulation occurs as aerobic respiration takes place in them and they can perform sustained action for prolonged time, without getting fatigued.

Ans 05. Red muscles:

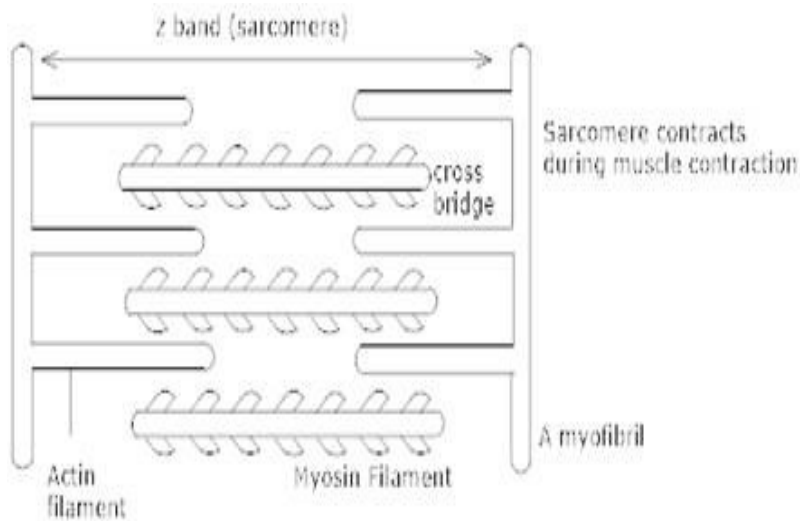
- They are thin muscle fibres
- Have myoglobins, which impart red colour to them.
- Have more mitochondria.
- Can perform sustained work for a longer period, without fatigue.
- Undergo aerobic respiration

White muscles:

- They are thick muscle fibres.
- Have less amount of myoglobin
- Have less mitochondria.
- Can perform fast and strenuous work for a short period.
- Depend on anaerobic metabolism, leads to lactic acid production and hence can be fatigued easily..

Ans 06. Floating ribs – The last two pairs of ribs (11th and 12th pairs) are called floating ribs. They are dorsally attached to the respective thoracic vertebrae and are free ventrally (which are attached neither to the sternum nor to the cartilages of other ribs).

Ans 07.



I-band and H-band shortens when the muscle contract.

Ans 08. Disorders of muscular system are as follows:

- (i) Myasthenia gravis: It is an autoimmune disorder, that affects the neuron muscular junction, leading to progressive weakening and paralysis of skeletal muscles.
- (ii) Muscular dystrophy – It is a genetic disorder resulting in progressive degeneration of skeletal muscles.
- (iii) Tetany – It refers to the rapid spasm (wild contraction) or the continued state of contraction due to low Ca^{+} in the body fluid.

Ans 09. Various types of joints – When two or more bones or or a bone and cartilage meet at a point of contact they form a joint. The joints help in performing various types of movements. In the body of vertebrates three types of joints are found –

1) Synovial Joints or Perfect Joints –The joints have a fluid filled synovial cavity between the articulating surfaces of the two bones synovial joints are capable of performing movements in more than one plane. These joints may be of the following categories-

(a) Ball and socket joints – As the name suggests in this type of joint one bone forms a cup like depression of socket in which ball like structure fits. The head or ball can move freely can the joint in any direction. Ex – shoulder and hip joints.

(b) Hinge joint – In this type of joint movement is performed only in one direction. Ex elbow, knee joint, joints of phalanges of fingers & toes.

(c) Gliding joints – such are the joints in which one surface glides over another such joints are found in the vertebral column.

(d) Pivot joint – One bone of the joint is always fixed and other is able to move freely over the former. Such joints can be seen in the skull of man which moves freely over the odontoid process the 2nd neck vertebra.

(e) Saddle joints : It resembles ball & socket joint except that ball and socket are not fully developed.

2) Imperfect Joint – the joints which do not possess synovial capsule or connecting ligaments are called imperfect joints. e.g. the joint between the ilium of pelvic girdle and transverse process by sacral vertebra.

3) Immobile joints:- Joints which are permanently fixed and cannot perform any movement are termed as immobile joints. These are fibrous joints having dense fibrous connective tissues. e.g. Various flat skull, which are fused with each other. These joints do not allow any kind of movements.