DPP
DAILY PRACTICE PROBLEMS

Class : XIth
Date :

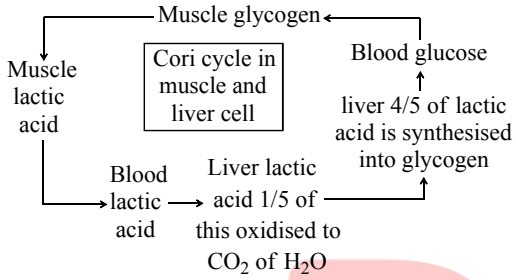
Solutions

Subject : BIOLOGY
DPP No. : 4

Topic :- Locomotion & Movement

1 **(b)**

Lactic acid is formed due to anaerobic break down of glycogen (muscle)



2 **(b)**

The junction between a motor neuron and sarcolemma of muscle is called neuromuscular junction

(i) A neural signal reaching this junction (motor end plate) release a neurotransmitter

(ii) Repeated activation of muscles can lead to the accumulation of lactic acid due to anaerobic break down of glucose in them

3 **(d)**

Skull provides a bony protection of the brain the blais. The skull consists of 29 bones. The bones of skull is divided into following parts:

Cranial bones -8

Facial bones -14

Hyoid bone -1

Bones of middle ear -6

4 **(c)**

Fascia.

Each organized skeletal muscle in our body is made of a number of muscle bundles or fascicles held together by a common collagenous connective tissue layer called fascia. Each muscle bundle contains a number of muscle fibres

5 **(d)**

When ATP binds to myosin filament there is a detachment of myosin and actin filament. Due to detachment, the sliding (contraction) takes place and the hydrolysis of ATP to ADP takes place. In that step again, the cross bridge formation between actin and myosin takes place

6 **(d)**

Flagellar movements

(i) Flagella of choanocytes maintains a regular current of water in the body (sponges)
(ii) Performs locomotion in euglenoids and other flagellar protists (*Chlamydomonas*), sperm, etc.
(iii) Helps in the circulation of food
(iv) Flagellate choanocytes brings about the circulation of water in canal system of sponges

7 **(a)**

Human vertebral column is formed by 20 serially arranged units called vertebrae. In the embryonic state, they were 33 but later they fuse and forms 26 vertebrae.
It extends from the base of the skull and constitutes the main framework of the trunk. Each vertebra has a central hollow portion (neural canal) through, which the spinal canal passes

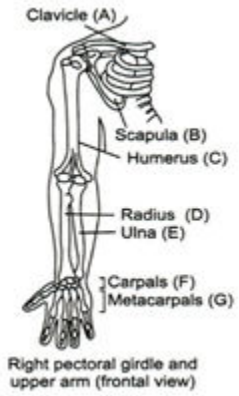
8 **(d)**

The reduction in force of contraction of a muscle after prolonged stimulation is called muscle fatigue. The accumulation of lactic acid leads to muscle fatigue. Lactic acid is produced by glycolysis in absence of O_2.

9 **(d)**

Visceral muscles are located in the inner wall of hollow visceral organs of the body like the alimentary canal, reproductive tract, etc. They don't exhibit any striation and are smooth in appearance hence they are called smooth muscles (non-striated muscles). Their activities are not under the voluntary control of the nervous system and are therefore, called involuntary muscles. They assist, for example, in the transportation of food through the digestive tract and gametes through the genital tract

10 **(d)**



Right pectoral girdle and upper arm (frontal view)

11 **(d)**

(i) Non-striated muscles are involuntary. They don't obey according to our like heart muscles
(ii) Microfilament are involved in the movement of *Amoeba* and ciliatory protist

12 **(c)**

The contractile property of the muscles is effectively used for locomotion and other movements by human beings and majority of multicellular organisms. Locomotion requires a prefect coordinated activity of muscular, skeletal and neural systems

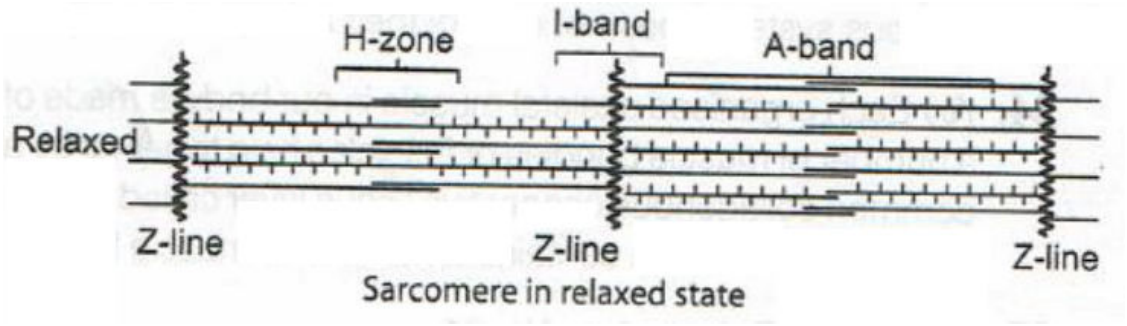
14 **(b)**

Outward projection of head region of meromyosin.
Each myosin (thick filament) is a polymerized protein. Many monomeric proteins called meromyosin constitutes one thick filament. Each meromyosin has two important parts, a globular head with a short arm and a tail, the former being called heavy meromyosin and the later is called light meromyosin.
The HMM component, *i.e.,* the head and short arm projects outwards at regular distance and angle from each other from the surface of polymerized myosin filament and is called cross arm. The globular head is an active ATPase enzyme and has binding sites for ATP and active sites for actin

15 **(b)**
The contraction of skeletal muscle includes ultrastructural and biochemical events. Ultrastructural events leads with stimuli excitation of T-system followed by crossbridge formation (myosin and actin filaments involved) and the cross bridge breakage. The biochemical events explain that stimuti leads to neurotransmitter secretion, excitation of T-system and release of Ca^{2+}.

16 (a)
Sacral and coccygeal (caudal) vertebrae are fused vertebrae in human beings
Sacral vertebrae First five sacral vertebrae gets fused to form sacrum. It is a strong and short supporting pelvic girdle as it (sacrum) articulates with the ilium of pelvic girdle
Caudal or coccygeal vertebrae Mainly 3 to 4 caudal vertebrae gets fused to form a small triangular bone called coccyx. It is the vestigial tail in humans

17 **(d)**
None of these.



The thick filaments lies parallel to one another and thin filaments are present in orderly array between the thick filaments. In the centre of the I-band, there is a band of amorphous material called Z-line. In the middle of the A-band a comparatively less dark zone called H-zone of band is present. The area between the two Z-lines is called sarcomere. M-line is present, in the middle of H-zone.
In the centre of each I-band is an elastic fibre called Z-line which bisects it. The thin filaments are firmly attached to the Z-line. The thick filaments in the A-band are also held together in the middle of this band by thin fibrous membrane called M-line. The A and I-band are arranged alternately throughout the length of myofibrils. The portion of the myofibrils between two

successive Z-lines is considered as the functional unit of contraction called sarcomere

18 (d)
Hyaluronic acid lubricates ligaments and tendons and is an important constituent of synovial fluid of bone joints, vitreous humour of eyes, etc.

19 (b)
Troponin is a muscle protein, associated with actin in thin filaments.

20 (c)
Nucleus pulposes is the central soft part of intervertebral disc representing remains of notochord (shock absorber).

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**B**	**B**	**D**	**C**	**D**	**D**	**A**	**D**	**D**	**D**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**D**	**C**	**A**	**B**	**B**	**A**	**D**	**D**	**B**	**C**