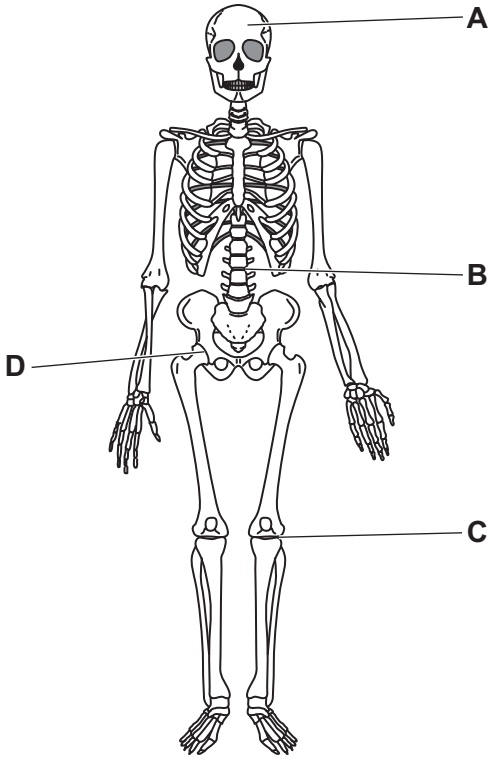
Topic: Joints and Muscles-Set-1

1 The diagram shows the human skeleton with different joint types labelled **A**, **B**, **C** and **D**.



(a) Name the joint type at **A and D**.

joint type at **C** .....

joint type at D.....

[2]

(b) Describe the difference between the joints labelled **C** and **D** in terms of their range of movement and stability.

.....

.....

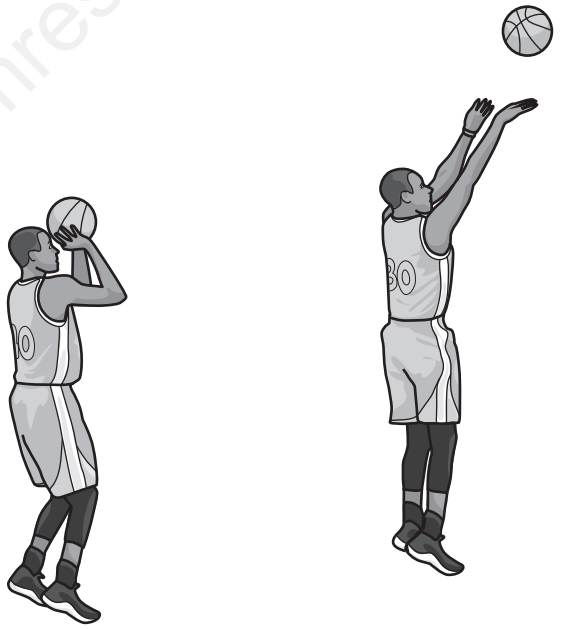
.....

..... [1]

MARK SCHEME:

(a) C-Hinge joint and D-Ball and socket joint
(b) joint D has a greater range of movement than C;

2 **(a)** The diagrams show a basketball player at different stages of shooting.



A **B**

(a) Describe the antagonistic muscle action that creates the type of movement occurring at the elbow joint from diagram **A** to diagram **B**.

.....

.....

.....

.....

.....

.....

.....

..... [4]

(b) (i) Name the type of synovial joint at each of the following:

shoulder joint .....

elbow joint. .....

[2]

MARK SCHEME:

(a)	biceps; triceps; biceps relax / lengthen **OR** biceps act as the antagonist; triceps contract / shorten **OR** triceps act as the prime mover / agonist;	**4**
(b)	*1 mark for naming each type of synovial joint.* shoulder: ball and socket (joint); elbow: hinge (joint);	**2**

3 Fig. 7.2 shows the muscles and bones around the elbow joint.

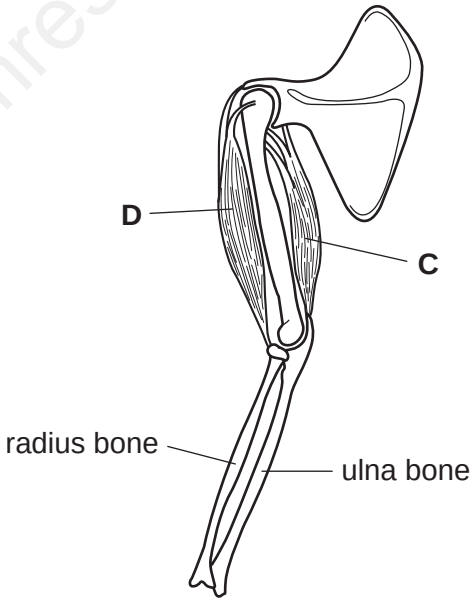


Fig. 7.2

(i) Name the structures labelled **C** and **D** as shown on Fig. 7.2.

C .....

D ..... [2]

(ii) A nerve impulse stimulates muscle **D** to contract.

Describe what will happen to the muscles and bones of the arm.

.....

.....

.....

..... [2]

[Total: 9]

MARK SCHEME:

(i)	**C** – triceps (muscle); **D** – biceps (muscle);	[2]	I – extensor I – flexor
(ii)	1 muscle **D** pulls on bones of lower arm; 2 lower arm is raised; 3 pivoting at elbow / joint; 4 muscle **C** relaxes;	max [2]	Any two – 1 mark each MPs 1 and 4 can both be awarded even if "muscle" appears only once.

4 Fig. 8.1 shows the bones and muscles of a human leg.

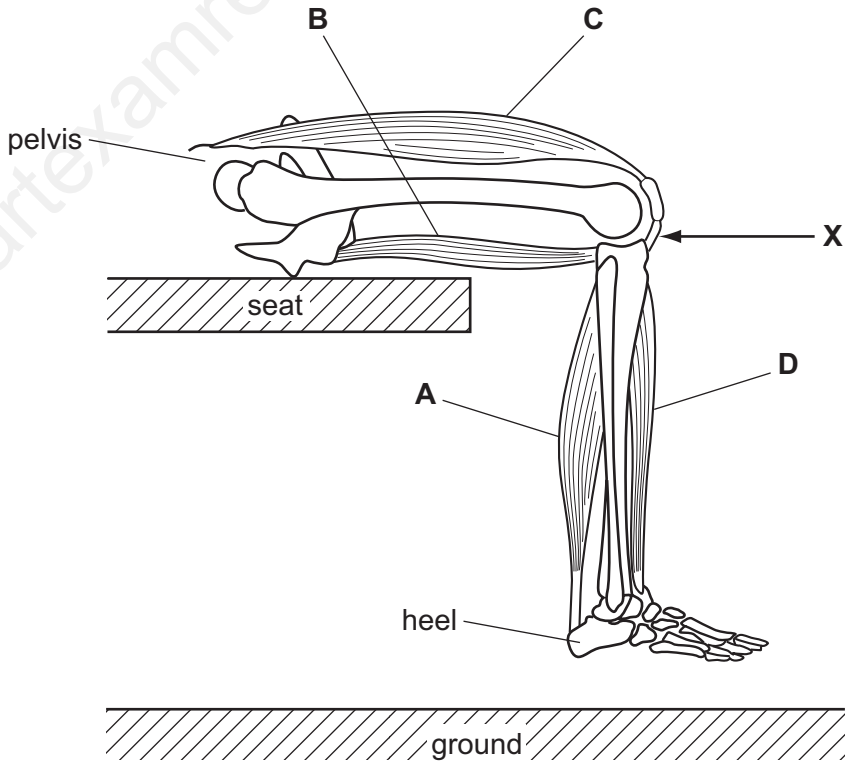


Fig. 8.1

(a) Muscles in the leg work antagonistically.

(i) State which muscle is antagonistic to muscle **A**.

..... [1]

(ii) Explain what is meant by *antagonistic*.

.....

.....

..... [2]

MARK SCHEME:

(a)	**(i)** **D**;	[1]	A – correct name for **D**
	(ii) a pair of muscles; pulling/effect of muscles acting/working in opposite directions/OWTTE;	[2]	A – one contracts while the other relaxes

5 Fig. 3.1 shows part of the human arm.

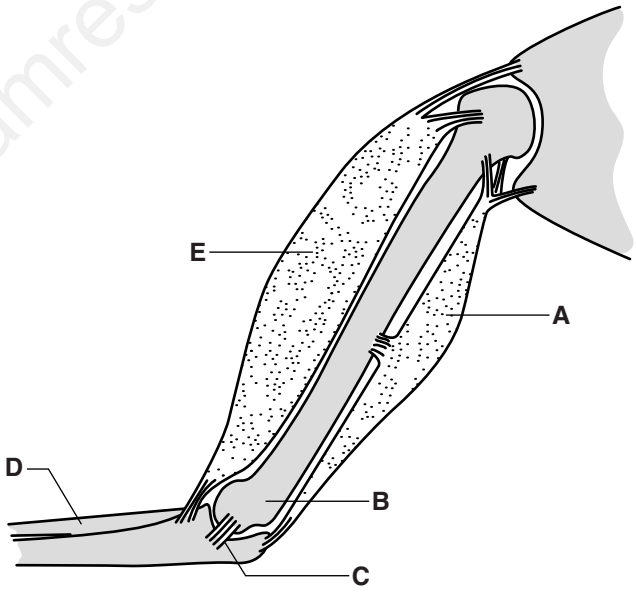


Fig. 3.1

(a) State which letter shows:

the biceps; ..... [1]

the triceps. ..... [1]

(b) State which letter shows a structure that contracts to extend (straighten) the arm at the elbow.

..... [1]

(c) Explain what is meant by *antagonistic muscles.*

.....

.....[1]

MARK SCHEME:

(a)	biceps: **E;** triceps: **A;**	[2]	
(b)	**A;**	[1]	
(c)	two muscles which have opposite effects / OWTTE;	[1]	