**13 SKELETON MK**

WACE 2014 Q 40

An elderly man visited the doctor and was diagnosed with osteoarthritis in his left hip joint. The doctor needed to inform the man about the disease and how it could be treated.

1. Summarise the information about osteoarthritis that the doctor would have provided to the man. Include in your answer the possible causes and risk factors that could lead to developing the disease, its effects on the body and the treatment options for osteoarthritis sufferers. (11 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Causes and risk factors |  |
| Any three of: | 1–3 |
| * Aging/over 45
* Joint injury/overuse
* Hereditary factors
* More common in females
* Obesity
* Joint alignment issues/dislocating joints/bow legged/double- jointedness
* Exact causes unknown
 |
| Effects |  |
| Any five of: | 1–5 |
| * (Articular) cartilage softens/degenerates/roughens/wears away
* Bone tissue is exposed
* Ends of the bones rub together
* Bone spurs develop/joint deformity/ends of bones thicken/joint may lose its normal shape/bone wears away
* Restricting movement/causing pain with movement
* Inflammation of the joint /swelling of joint
 |
| Treatments |  |
| Any three of: | 1–3 |
| * Pain medication
* Anti-inflammatory drugs
* Physiotherapy
* Injections (cortisol/lubrication)
* Joint replacement surgery
* Joint realignment surgery
* Maintaining a healthy lifestyle/physical activity/maintaining healthy weight
 |
| **Total** | **11** |

(b) The hip joint is classified as a synovial joint. Name and describe **four** different types of synovial joints and identify to which one of these types the man’s affected hip joint belonged. (9 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Affected hip joint Ball and socket joint | 1 |
| Any 4 synovial joints:(1 mark for name and 1 mark for description) | 1–8 |
| Hinge joint |
| Convex surface of one bone fits into concave surface of another/allows movement in one plane/allow flexion and extension movements |
| **or** |
| Ball and socket joint |
| Spherical head of one bone fits into cup cavity of another/allows movement in all directions |
| **or** |
| Pivot joint |
| Pointed end of one bone fits into ring of another/allows rotational movement/one bone rotates around another |
| **or** |
| Gliding joint |
| Irregular shaped bones held together by ligaments/allows bones to slide past one another/movements side to side or back and forth |
| **or** |
| Saddle joint |
| Two bones both saddle shaped fit together to form joint/allows side to side or back and forth movement/allows flexion, extension, abduction and adduction movements (circumduction) |
| **or** |
| Condyloid joint |
| One convex surface of a bone fits into a concave surface of another bone/allows movement in two directions/allows flexion, extension, abduction and adduction movements (circumduction) |
| **Total** | **9** |

# Question 37 WACE 2013 (10 marks)

1. Vertebrae are joined by cartilaginous joints.
	1. Name the type of cartilage that joins vertebrae to each other. (1 mark)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Fibrocartilage/ fibro | 1 |
| **Total** | **1** |

* 1. Describe how the structure of the cartilage referred to in part (a) (i) suits its function.

(2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Parallel (collagen) fibres | 1 |
| Coarse/ thick bundles of collagen/fibres |
| High proportion of collagen |
| Resists compression/ absorbs shock(slight compression)/ withstands pressure | 1 |
| **Total** | **2** |

1. With reference to the structure of both cartilage and bone, determine which would heal faster following injury. Justify your answer. (4 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Bone would heal faster | 1 |
| Blood delivers oxygen/ nutrients/ hormones for repair | 1–3 |
| Bone is permeated with blood vessels |
| Cartilage has no blood vessels running through it |
| Cartilage receives requirements diffused from perichondrium/ surrounding membrane/ synovial fluid |
| **Total** | **4** |

1. Osteoarthritis is a condition that is more likely to occur as people age. Describe **three**

effects of this condition. (3 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Articular cartilage softens/ degenerates/ roughens/ wears away | 1–3 |
| Bone tissue is exposed/ bone spurs develop/ bones rub/ joint deformity/ wears away bone |
| Restricting movement/ causing pain with movement |
| Inflammation of the joint/ structures of the joint/ swelling of joint |
| **Total** | **3** |