

# Exercise 34

**Aim:** To study different types of joints in human skeleton.

**Principle:** Bones may be movable, slightly movable or immobile depending on the nature of joints. Joints are defined as regions/surfaces of contact between bone and cartilage.

**Requirement:** Specimen of human skeleton, charts and models of skeleton.

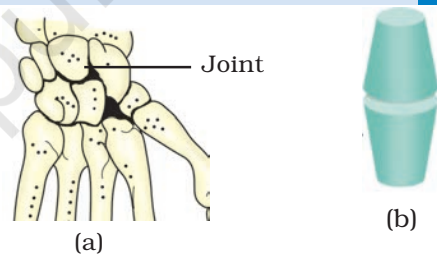
## Procedure

- (i) Observe the different types of bones and joints present in a human skeleton.
- (ii) Draw labeled diagram of your observations.

## Observation

### (a) Gliding Joints

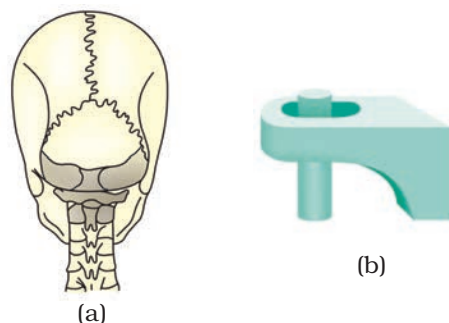
- (i) These are flat joints, which allow back and forth or side-to-side movement of all or a few joining elements. However, twisting is not possible.
- (ii) These joints are found between bones of tarsals and carpals (Fig. 34.1).



**Fig. 34.1** Gliding Joints (a) hind limb bones showing the joint (b) Diagrammatic representation

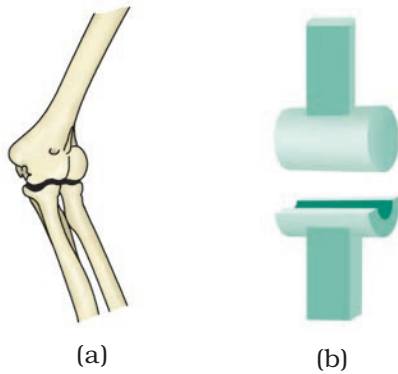
### (b) Pivot Joints

- (i) These joints allow rotational movement.
- (ii) These joints are found between the atlas and axis vertebrae of backbone. It is the odontoid process of the axis vertebra over which the atlas along with the skull rotate (Fig. 34.2).



**Fig. 34.2** Pivot Joints (a) Skull and vertebral column showing the joint (b) Diagrammatic representation

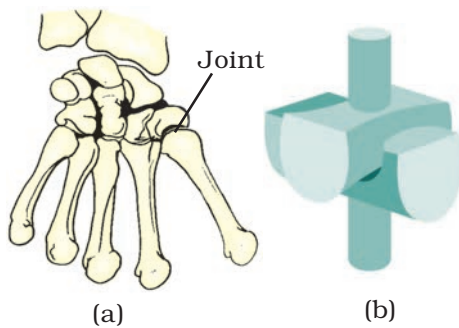
### Exercise 34



**Fig. 34.3** Hinge Joints (a) elbow bone showing the joint (b) Diagrammatic representation

#### (c) Hinge Joints

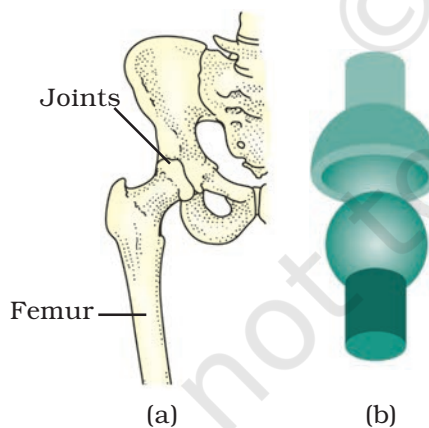
- (i) These joints allow movement in one plane only.
- (ii) These joints are present in elbow and knee (Fig. 34.3).



**Fig. 34.4** Saddle (a) carpals and thumb bone showing the joint (b) Diagrammatic representation

#### (d) Saddle Joints

- (i) These joints allow movement in two planes.
- (ii) These joints are found in bones of metacarpals and carpals of thumb (Fig. 34.4).



**Fig. 34.5** Ball and socket Joints (a) Femur and pelvic girdle showing the joint (b) Diagrammatic representation

#### (e) Ball and Socket Joints

- (i) These joints allow movement in more than two planes (Fig. 34.5).
- (ii) These joints are present between humerus with pectoral girdle, femur with pelvic girdle, and malleus with incus (in ear ossicles).