SNS COLLEGE OF ALLIED HEALTH SCIENCE, COIMBATORE –35
(Affiliated to the Tamil Nadu Dr M.G.R Medical University, Chennai)
B.Sc. OPERATION THEATRE AND ANAESTHESIA TECHNOLOGY

PUZZLE
1131 – BASIC SCIENCES - ANATOMY
UNIT II – OSTEOLOGY

Classification of Bones Logic Puzzle: Type and Function Matching

Scenario: **Total marks: 10 marks**

An anatomy professor is examining skeletal X-rays to classify bones by shape and function. Key bone types include long, short, flat, irregular, sesamoid, and pneumatized. A congenital disorder affects specific bone development, and the student must match each bone type to its structural classification, primary function, embryonic origin, and example location. Only one function per type, ensuring biomechanical logic across the skeleton.

Clues:

1. Long bones are cylindrical with diaphysis and epiphyses, primarily for leverage/movement; endochondral ossification; found in limbs (e.g., femur, humerus).
2. Short bones are cube-shaped, providing stability and shock absorption; endochondral; carpals/tarsals in wrist/ankle.
3. Flat bones have broad surfaces for muscle attachment and protection; intramembranous ossification; skull (frontal), ribs, sternum, pelvis.
4. Irregular bones have complex shapes for specialized functions; mixed ossification; vertebrae, facial bones (e.g., mandible), sacrum.
5. Sesamoid bones develop in tendons to reduce friction/protect; endochondral; patella (knee), small hand/foot sesamoids.
6. Pneumatized bones contain air sinuses for weight reduction and voice resonance; endochondral with epithelial invagination; ethmoid, sphenoid, mastoid, maxillary.
7. The congenital disorder selectively impairs intramembranous ossification, affecting flat bones more than endochondral types like long/short.
8. Functions align with location: limb support (long), joint stability (short), organ protection (flat), spinal support (irregular), tendon protection (sesamoid).
9. Bone classification guides fracture patterns: long bones prone to spiral/shaft fractures, flat to depressed fractures, irregular to compression.

Question: Match each bone type to its structural features, function, ossification mode, and example, and identify which bone type is most affected by the congenital disorder disrupting intramembranous ossification.

Rubrics

Criterion	**Points**
Key Elements	2 pts
Logical Steps	4 pts
Correct Solution	2 pts
Biological Insight	2 pts
Total	**10 pts**