

**HUMAN ANATOMY & PHYSIOLOGY – 2ND QUARTER MID-TERM
ANSWER SHEET DUE BY MIDNIGHT, MONDAY, NOVEMBER 19, 2012**

I. MULTIPLE CHOICE

- 1) One function of this long bone structure is the storage of energy in the form of triglycerides
a) diaphysis b) epiphysis c) metaphysis d) periosteum e) marrow
- 2) This is the region of a long bone that articulates with other bones
a) diaphysis b) epiphysis c) metaphysis d) periosteum e) marrow
- 3) This is the shaft of a long bone
a) diaphysis b) epiphysis c) metaphysis d) periosteum e) marrow
- 4) This is a layer of hyaline cartilage that reduces friction between bones involved in a joint
a) periosteum b) distal epiphysis c) nutrient foramen d) articular cartilage e) epiphyseal plate
- 5) This is a layer of hyaline cartilage that allows the diaphysis to grow in length
a) periosteum b) distal epiphysis c) nutrient foramen d) articular cartilage e) epiphyseal plate
- 6) This is the region of long bone found between the diaphysis and the epiphysis
a) epiphyseal plate b) epiphyseal line c) metaphysis d) diaphyseal line e) diaphyseal plate
- 7) This is the fibrous covering on the surface of bone that is involved in thickening of the bone
a) periosteum b) endosteum c) marrow d) epiphysis e) metaphysis
- 8) Which of following selections lists bone cells in the order from unspecialized stem cell to highly specialized mature bone cell?
a) osteogenic cells, osteoclasts, osteocytes
b) osteogenic cells, osteoblasts, osteocytes
c) osteogenic cells, osteocytes, osteoblasts
d) osteoblasts, osteogenic cells, osteocytes
e) none of these choices
- 9) These are considered bone-building cells
a) fibroblasts b) osteoclasts c) osteocytes d) osteoblasts e) all of these choices
- 10) These are considered bone-dissolving cells
a) osteogenic cells b) osteoclast c) osteocytes d) osteoblasts e) all of these choices
- 11) Which of the following structures contain osteocytes?
a) haversian canals b) volkmann's canals c) concentric lamellae d) lacunae e) canaliculi
- 12) These are extensions of the lacunae and are filled with extracellular fluid
a) volkmann's canals b) haversian canals c) osteons d) canaliculi e) periosteum
- 13) Which of the following statements about bone remodeling is FALSE?
a) it occurs throughout your lifetime
b) it involves bone resorption
c) it involves bone deposition
d) it occurs at different rates at different locations
e) it occurs at a faster rate in compact bone than spongy bone
- 14) Which of the following two minerals are needed in large quantities when bones are growing?
a) calcium and chlorine
b) magnesium and sulfur
c) calcium and phosphorous
d) manganese and sulfur
e) potassium and phosphorous
- 15) This type of fracture is considered a partial fracture and is only seen in children
a) open b) comminuted c) impacted d) greenstick e) stress

- 16) About 25% of all stress fractures involve which bone?
 a) rib b) clavicle c) humerus d) ulna e) tibia
- 17) Which of the following conditions results when the articular cartilages in a joint degenerate to the point where the bony ends of articulating bones touch?
 a) osteogenic sarcoma b) rickets c) osteomalacia d) osteoarthritis e) osteopenia
- 18) The general process by which bones form is called
 a) ossification b) osteomalacia c) calcification d) apposition e) orthodontics
- 19) Which of the following selections correctly lists the sequence of events that occur during intramembranous ossification?
 a) Ossification center develops > Calcification > Formation of trabeculae > Development of new periosteum
 b) Calcification > Ossification center develops > Formation of trabeculae > Development of new periosteum
 c) Ossification center develops > Formation of trabeculae > Calcification > Development of new periosteum
 d) Development of new periosteum > Ossification center develops > Calcification > Formation of trabeculae
 e) Ossification center develops > Calcification > Development of new periosteum > Formation of trabeculae
- 20) During endochondral ossification in a fetus, bones initially develop as a cartilage model surrounded by a connective tissue covering called the
 a) periosteum b) endosteum c) perichondrium d) perimysium e) trabeculae
- 21) Which of the following is NOT a major function of the skeletal system?
 a) support b) locomotion c) hemopoiesis d) energy storage e) carcinogenesis
- 22) Like other _____, bone tissue contains an abundant extracellular matrix that surrounds widely separated cells
 a) epithelial tissues b) muscular tissues c) nervous tissues d) connective tissues e) facial tissues
- 23) Which of the following statements is NOT true?
 a) The axial skeleton has 80 bones
 b) The appendicular skeleton has 126 bones
 c) The axial skeleton is composed of the bones that run through the axis of the body
 d) Children have more bones than adults
 e) The appendicular skeleton does not include the pelvic and pectoral girdles
- 24) Which of the following bones is NOT part of the axial skeleton?
 a) Hyoid b) Ribs c) Vertebrae d) Carpals e) Sternum
- 25) Which of the following bones is part of the axial skeleton?
 a) Tarsals b) Tibia c) Sphenoid d) Scapula e) Clavicle
- 26) Which of the following types of bone is the femur?
 a) Long bone b) Short bone c) Flat bone d) Irregular bone e) Sesamoid bone
- 27) Which following types of bone is the occipital bone?
 a) Long bone b) Short bone c) Flat bone d) Irregular bone e) Sesamoid bone
- 28) Which following types of bones comprise the ankles and wrists?
 a) Long bone b) Sutural bone c) Irregular bone d) Sesamoid bone e) Short bone
- 29) Which of the following is NOT true of surface markings on bone?
 a) They allow the passage of nerves and blood vessels
 b) They provide sites of attachment for muscles
 c) They allow bones to shorten or lengthen
 d) They help form joints
 e) They can be depressions or projections
- 30) An opening or hole in a bone through which blood vessels, nerves and ligaments pass is called a
 a) fissure b) foramen c) fossa d) meatus e) sulcus
- 31) A rounded articular projection supported on a constricted portion (neck) of a bone is called a
 a) foramen b) condyle c) tuberosity d) head e) trochanter
- 32) A prominent ridge or elongated projection on a bone is called a
 a) crest b) trochanter c) sulcus d) fossa e) tubercle

- 33) The tube-like passageway found in the temporal bone that allows sound waves to reach the eardrum is an example of which of the following bone surface markings?
- a) fissure b) foramen c) fossa d) meatus e) sulcus
- 34) Bones in the following area protect the brain
- a) Cranium b) Vertebral column c) Sacrum d) Face e) Ribcage
- 35) Which of the following cranial bones are paired bones in the human skull?
- a) temporal b) parietal c) sphenoid d) ethmoid e) more than one selection is correct
- 36) Which of following facial bones is a single (unpaired) bone in the human skull?
- a) maxilla b) nasal c) lacrimal d) mandible e) zygomatic
- 37) Which of the following is NOT a facial bone?
- a) Parietal b) Nasal c) Maxillae d) Zygomatic e) Palatine
- 38) Which of the following bones is NOT visible from the anterior view of the skull?
- a) Parietal b) Frontal c) Mandible d) Occipital e) Maxilla
- 39) These cranial bones contain the organs of hearing and balance, and articulate with the mandible
- a) Frontal b) Temporal c) Parietal d) Occipital e) Nasal
- 40) The mastoid process
- a) is a rounded projection of the parietal bones
b) is the point of attachment for several neck muscles
c) is anterior to the external auditory meatus
d) is both is a rounded projection of the parietal bones and the point of attachment for several neck muscles
e) All of these answer choices are correct
- 41) Which cranial bone is called the "keystone" of the cranial floor because it articulates with every other cranial bone?
- a) Occipital b) Frontal c) Ethmoid d) Nasal e) Sphenoid
- 42) This cranial bone is anterior to the sphenoid and posterior to the nasal bones. It contains foramina for the olfactory cranial nerve
- a) Ethmoid b) Frontal c) Palatine d) Maxilla e) Temporal
- 43) This facial bone articulates with teeth
- a) Lacrimal b) Palatine c) Vomer d) Maxillae e) Nasal
- 44) Which of the following is NOT a facial bone?
- a) Vomer b) Palatine c) Lacrimal d) Occipital e) Mandible
- 45) Which bone of the axial skeleton does NOT articulate with any other bone?
- a) Vertebrae b) Ethmoid c) Sternum d) Hyoid e) Ilium
- 46) Joe was found dead. His hyoid bone was broken. What was the most likely cause of death?
- a) Natural causes b) Cardiac arrest c) Gun shot d) Strangulation e) Choking
- 47) Ribs that have costal cartilage that attaches directly to the sternum are called
- a) floating ribs b) vertebrochondral ribs c) false ribs d) true ribs e) separated ribs
- 48) The two primary curves of the adult vertebral column are the
- a) thoracic and sacral curves
b) lumbar and sacral curves
c) cervical and lumbar curves
d) cervical and thoracic curves
e) cervical and sacral curves
- 49) The primary function of the transverse and spinal processes of vertebrae is
- a) attachment site for muscles
b) calcium storage
c) to support the body of the vertebrae
d) to hold the hyoid in place
e) to create a passageway for the spinal cord

- 50) Which of the vertebrae listed below would be the largest and strongest vertebra in adult humans?
 a) C5 b) L4 c) T4 d) C7 e) T12
- 51) Which condition is characterized by an increase or exaggeration of the lumbar curve of the vertebral column?
 a) herniated disc b) scoliosis c) kyphosis d) lordosis e) spina bifida
- 52) Which condition is characterized by an increase in the thoracic curve of the vertebral column?
 a) herniated disc b) scoliosis c) kyphosis d) lordosis e) spina bifida
- 53) Which condition is characterized by a lateral bending of the vertebral column in the thoracic region?
 a) herniated disc b) scoliosis c) kyphosis d) lordosis e) spina bifida
- 54) The union of these two bones forms the zygomatic arch
 a) temporal and zygomatic
 b) sphenoid and maxilla
 c) temporal and mandible
 d) temporal and frontal
 e) temporal and parietal
- 55) This is the anterior bone that articulates with the manubrium of the sternum at the sternoclavicular joint
 a) Scapula b) Clavicle c) Xiphoid d) Rib e) Thoracic vertebra
- 56) This bone has an S-shape that includes the medial half of the bone being convex anteriorly and the lateral half being concave anteriorly
 a) Sternum b) Scapula c) Humerus d) Clavicle e) Ileum
- 57) This part of the clavicle is rounded and articulates with the manubrium of the sternum
 a) Acromial extremity b) Conoid tubercle c) Sternal end d) Costal tuberosity e) Xiphoid process
- 58) Which bone articulates with the scapula at the glenoid cavity?
 a) Ileum b) Thoracic vertebra c) Sternum d) Clavicle e) Humerus
- 59) Which of the following statements is TRUE with regard to the human hand?
 a) There are 5 carpals, 8 metacarpals and 14 phalanges.
 b) There are 8 carpals, 6 metacarpals and 14 phalanges
 c) There are 8 carpals, 5 metacarpals and 15 phalanges
 d) There are 8 carpals, 5 metacarpals and 14 phalanges
 e) There are 5 carpals, 8 metacarpals and 14 phalanges
- 60) The capitulum of the humerus articulates with the
 a) radius b) ulna c) scapula d) carpal bones e) clavicle
- 61) The medial and lateral epicondyles are found on the distal end of the humerus and are used for
 a) formation of the elbow joint
 b) tendon attachment
 c) passage of nerves and blood vessels through the bone into the marrow cavity
 d) Both formation of the elbow joint and tendon attachment
 e) All of these choices are correct.
- 62) Which of the following bones is the longest?
 a) Radius b) Phalange c) Clavicle d) Ulna e) Scaphoid
- 63) Which of the following structures is found in the elbow?
 a) Acromion b) Surgical neck c) Olecranon d) Lesser tubercle e) A and C
- 64) Where does the biceps brachii muscle attach to the ulna?
 a) Radial tuberosity b) Styloid process c) Ulnar tuberosity d) Coronoid process e) Olecranon
- 65) What is the function of the interosseous membrane between the ulna and radius?
 a) Joins the shafts of two bones
 b) Tendon attachment
 c) Site of bone repair
 d) Both site of tendon attachment and bone repair
 e) None of these choices are correct.

- 66) The carpal bones of the wrist are arranged
- in 2 transverse rows of 5 bones
 - in 3 transverse rows of bones
 - in 2 transverse rows of 4 bones
 - in 2 parallel rows of 4 bones
 - randomly
- 67) What is the function of the pelvic girdle?
- Support for vertebral column
 - Attachment site for lower limbs
 - Attachment site for large pectoral muscles
 - Attachment site for lower limbs and for large pectoral muscles
 - All of these choices are correct
- 68) In the standard anatomical position, the _____ is the bone of the pelvis found the most superior.
- Ilium
 - Pubis
 - Ischium
 - A and C
 - all of these choices
- 69) The hip joint is the joint found between
- the femur and tibia
 - the pelvis and sacrum
 - the pelvis and tibia
 - the femur and patella
 - the pelvis and femur
- 70) The portion of the bony pelvis that is found inferior to the pelvic brim is called
- the false pelvis
 - the greater pelvis
 - the true pelvis
 - A and B
 - all of these choices
- 71) In comparison to the male pelvis, the female pelvis is NOT
- wider
 - shallower
 - larger in pelvic inlet
 - larger in pelvic outlet
 - larger in acetabulum
- 72) This is a bone that develops in the tendon of the quadriceps femoris muscle and protects the knee joint
- Ischium
 - Ilium
 - Pubis
 - Patella
 - Femur
- 73) Which of the following structures is not found in the foot?
- Pollex
 - Hallux
 - Talus
 - Longitudinal arch
 - Transverse arch
- 74) During embryonic and fetal develop, most skeletal tissues arise from
- the neurocranium
 - the notochord
 - mesenchymal cells
 - endoderm
 - none of these choices
- 75) The skull begins to develop during the _____ week after fertilization
- first
 - second
 - third
 - fourth
 - fifth
- 76) The boundary between the true pelvis and the false pelvis is the
- pelvic axis
 - pubic symphysis
 - pelvic outlet
 - pelvic brim
 - pectineal line
- 77) The route taken by the baby's head during childbirth follows the _____ as it travels through the pelvis
- pelvic axis
 - plane of pelvic outlet
 - pelvic brim
 - sacral promontory
 - pectineal line
- 78) This type of joint lacks a joint cavity and is held together by a fibrous connective tissue: 1) Fibrous joints; 2) Cartilaginous joints; 3) Synovial joints
- 1 only
 - 2 only
 - 3 only
 - 1 and 2
 - All of these choices
- 79) Which of the following types of joints do NOT have a synovial cavity? 1) Fibrous joints; 2) Cartilaginous joints; 3) Synovial joints
- 1 only
 - 2 only
 - 3 only
 - 1 and 2
 - All of these choices
- 80) This functional class of joints contains joints that are freely movable: 1) Synarthrosis; 2) Amphiarthrosis; 3) Diarthrosis
- 1 only
 - 2 only
 - 3 only
 - Both 2 and 3
 - All of these choices
- 81) The functional joint classification that a suture joint fits into is
- synarthrosis
 - amphiarthrosis
 - diarthrosis
 - synovial
 - cartilaginous
- 82) Which of the following types of joints is also called a dentoalveolar joint?
- Syndesmosis
 - Gomphosis
 - Synchondrosis
 - Symphysis
 - Suture
- 83) The epiphyseal plate in a long bone is an example of this type of joint
- Gomphosis
 - Suture
 - Symphysis
 - Synovial
 - Synchondrosis

- 84) Where do all the symphysis joints in the human body occur?
 a) Upper limbs b) Lower limbs c) Axial skeleton d) Ankles e) Knees
- 85) Which of the following is(are) made from dense regular connective tissue?
 a) Ligaments b) Articular cartilage c) Articular fat pads d) Synovial membrane e) Synovial fluid
- 86) Which of the following structures is NOT used to reduce friction in joints?
 a) Tendon sheaths b) Synovial fluid c) Bursae d) Accessory ligaments e) All of these choices
- 87) This type of motion results from relatively flat bone surfaces moving back and forth and from side to side with respect to one another
 a) Flexion b) Extension c) Gliding d) Circumduction e) Hyperextension
- 88) This is a type of movement where there is a decrease in the angle between articulating bones
 a) Flexion b) Extension c) Gliding d) Circumduction e) Rotation
- 89) Bending the trunk forward at the intervertebral discs is an example of what type of angular movement?
 a) Flexion b) Extension c) Lateral flexion d) Hyperextension e) None of these choices
- 90) This type of complex movement involves a continuous sequence of flexion, abduction, extension, and adduction resulting in a distal body part moving in a circle
 a) Gliding b) Lateral flexion c) Hyperextension d) Circumduction e) Elevation
- 91) Which of the following is not considered a "special movement" that occurs at only certain joints?
 a) Depression b) Protraction c) Elevation d) Supination e) All of these choices
- 92) This special movement occurs when you bend your foot at the ankle in the direction of the foot's superior surface as would occur when you stand on your heels
 a) Inversion b) Eversion c) Dorsiflexion d) Plantar flexion e) Supination
- 93) This special movement involves moving your thumb across the palm to touch the tips of the fingers on the same hand
 a) Pronation b) Supination c) Eversion d) Retraction e) Opposition
- 94) Which of the following is NOT a structural category of synovial joints?
 a) Planar b) Hinge c) Condyloid d) Suture e) Saddle
- 95) In this type of synovial joint, a rounded or pointed surface on one bone articulates with a ring formed partly by another bone and partly by a ligament
 a) Pivot joint b) Planar joint c) Hinge joint d) Ball-and-socket joint e) Saddle joint
- 96) A condyloid joint
 a) is also called an ellipsoidal joint
 b) is considered to be biaxial
 c) allows both flexion–extension and abduction–adduction of the joint
 d) can be found in the wrist
 e) is All of these choices
- 97) Which of the following term refers to the span, measured in degrees of a circle, through which the bones of a joint can be moved?
 a) Lateral flexion b) Hyperextension c) Pronation d) Range of motion e) Disuse atrophy
- 98) Which of the following is NOT a factor affecting range of motion of a joint?
 a) Structure of bones b) Tension of the muscles c) Hormones d) Disuse e) Eversion
- 99) Which of the following is an autoimmune disease that affects the joints?
 a) gouty arthritis b) Lyme disease c) arthroplasty d) osteoarthritis e) rheumatoid arthritis
- 100) Which of the following results from a forceful wrenching or twisting of a joint that tears or stretches its ligaments but does not dislocate the bones?
 a) sprain b) strain c) subluxation d) bursitis e) compression
- 101) Bursae are saclike structures that are commonly found between bone and
 a) skin b) muscle c) ligaments d) tendons e) All of these choices

- 102) The hormone relaxin stimulates changes that lead to increased range of motion in the _____
- a) shoulder joint
 - b) pubic symphysis
 - c) temporomandibular joint
 - d) knee joint
 - e) coronal suture
- 103) Disuse of a limb, like would occur when the limb is in a cast, leads to muscular atrophy and _____ of the affected joint.
- a) increased range of motion
 - b) decreased range of motion
 - c) increased fluid accumulation in bursa
 - d) loosening of the tendons
 - e) chronic inflammation
- 104) In the United States, the two joints that are most commonly replaced by arthroplasty are _____
- a) shoulder and elbow
 - b) elbow and knee
 - c) shoulder and knee
 - d) hip and knee
 - e) shoulder and hip
- 105) A total hip replacement involves replacing _____
- a) the acetabulum only
 - b) the head of the femur only
 - c) the patella and distal condyles of the femur
 - d) both the acetabulum and the head of the femur
 - e) one entire side of the pelvis

II. SHORT ANSWER

- 1) Briefly describe the steps in bone deposition.
- 2) List and briefly describe the six main functions of the skeletal system.
- 3) Briefly describe the structure and function of the fontanelles.
- 4) While playing basketball, nine-year-old Marcus fell and broke his left arm. The arm was placed in a cast and appeared to heal normally. As an adult, Marcus was puzzled because it seemed that his right arm is longer than his left arm. He measured both arms and he was correct – his right arm is longer! How would you explain to Marcus what happened?
- 5) Bubba is a tug-of-war expert. He practices day and night by pulling on a rope attached to an 800lb anchor. What kinds of changes would you expect that he develops in his bone structure?
- 6) An archeologist and an anthropologist are studying two skeletons from an ancient tomb that had apparently been looted in an earlier time. Both skeletons are females and both are approximately the same height. However, the anthropologist is absolutely certain that one skeleton is the remains of someone from the privileged class while the other skeleton is the remains of a servant or slave. How could the anthropologist be so sure of the economic status of the individuals based solely on their skeletal remains?
- 7) Mrs. Paz's dog dug up a complete set of human bones in the park near her house. After examining the scene, the local police collected the bones and transported them to the coroner's office for identification. Later, Mrs. Paz read in the newspaper that the bone belonged to an elderly female. How was this determined?
- 8) List the three structural categories of joints and briefly describe the criteria used for structural classification of joints.
- 9) List the three functional classifications of joints, and briefly describe the basis for the functional classification of joints.
- 10) What unique characteristics would a person who is "double-jointed" possess?