

Please answer all questions on the answer sheet provided

Use only the designated letter for your answer; do not write the text as your answer nor use T or F.
In all cases, choose the selection which best serves as the answer; when in doubt, ask!

1. Mark the letter {a} on your answer sheet.

Use the following to describe the relative position of the structures in questions 2-4

- a. anterior
- b. posterior
- c. superior
- d. inferior

- 2. sole of foot in anatomic position
- 3. palm of hand in anatomic position
- 4. popliteal fossa [the space behind the knee] to patella

Use the following to describe the relative position of the structures in questions 5-7

- a. proximal
- b. distal
- c. medial
- d. lateral
- e. median

- 5. carpometacarpal joint III [the joint between the capitate and metacarpal III] to metacarpophalangeal joint III [the joint between the metacarpal and the proximal phalanx of digit III]
- 6. radius to ulna in anatomic position
- 7. pedal digit II to pedal digit III in anatomic position

Organs are classed together into organ systems. Associate the organs in questions 8-10 with their appropriate organ systems.

- a. cardiovascular system
- b. digestive system
- c. urinary system
- d. musculoskeletal system
- e. endocrine system

8. heart

9. biceps brachii m

[Note the usage of the m; this is anatomic shorthand for muscle. If we wanted to say muscles, we would use mm. We can use a for artery, v for vein, n for nerve, &c.]

10. stomach

11. Glucose is a

- a. polymer
- b. polysaccharide
- c. disaccharide
- d. monosaccharide

12. A long chain of simple sugars would be called a

- a. monosaccharide
- b. disaccharide
- c. deoxyribonucleic acid
- d. polysaccharide

13. Acids are

- a. proton acceptors
- b. catalysts
- c. hydrogen ions
- d. proton donors

14. NaOH is a(n)
- base
 - catalyst
 - hydrogen ion
 - proton donor
15. Adding an acid to a solution would
- increase the pH
 - have no effect on the pH
 - decrease the pH
 - release CO₂
16. Which of these is polar?
- nitrogen gas
 - a hydrogen ion
 - cholesterol
 - water
17. Eicosanoids are
- carbohydrates
 - lipids
 - proteins
 - hormones
18. The energy for cellular synthetic processes comes from the “energy currency” of the cell, which is
- oxygen
 - ATP
 - RNA
 - glucose
19. Which of the following is not a characteristic of the plasma membrane? It
- is solid
 - is selectively permeable
 - allows diffusion
 - contains proteins
20. If a cell is in a solution which would cause the cell to swell, the solute concentration of the solution is _____ the solute concentration inside the cell.
- greater than
 - less than
 - equal to
21. Which of the following would require facilitated diffusion to get into the cell?
- oxygen
 - small lipid-soluble molecules
 - large lipid-soluble molecules
 - glucose
22. The purpose of gap junctions is to
- anchor cells to the basement membrane
 - allow cells to move freely in the extracellular milieu
 - allow substances to pass from one cell to another
 - occlude the space between the cells so material cannot move between them
23. The cellular organelle that produces ATP is the
- cilium
 - smooth endoplasmic reticulum
 - free ribosome
 - mitochondrion
24. Which of these skin elements is *not* made from epithelial components?
- dermis
 - hair shaft
 - sweat gland
 - nail bed
25. The superficial fascia, or panniculus adiposus, is
- absent in men
 - located below the dermis
 - darkened by the tanning process
 - devoid of blood vessels
26. Which of these are immune system cells found in the epidermis?
- keratinocytes
 - melanocytes
 - Langerhans cells
 - Merkel’s disks

27. The fibrous protein in the epidermis of the skin which gives it protective properties is
- collagen
 - keratin
 - melanin
 - carotene
28. Sudoriferous (true sweat) glands are categorized as two distinct types. Which of the following are the two types of sweat glands?
- sebaceous and merocrine
 - mammary and ceruminous
 - eccrine and apocrine
 - holocrine and mammary
29. The dermis is a strong, flexible connective tissue layer. Which of the following cell types are likely to be found in the dermis?
- goblet cells, parietal cells, and Kupffer cells
 - monocytes, reticulocytes, and osteocytes
 - fibroblasts, macrophages, and mast cells
 - osteoblasts, osteoclasts, and epithelial cells
30. A needle would pierce the epidermal layers of the forearm, from superficial to deep, in which order?
- basale, spinosum, granulosum, corneum
 - basale, spinosum, granulosum, lucidum, corneum
 - granulosum, basale, spinosum, corneum
 - corneum, granulosum, spinosum, basale
31. A replacement of a cartilagenous "model" of a bone is seen in
- periosteal ossification
 - articular ossification
 - intramembranous ossification
 - enchondral ossification
32. The cartilagenous plates between the diaphysis and epiphysis are the
- nuchal lines
 - epiphyseal growth plates
 - periosteal
 - medullary spaces
33. The cells that are necessary for a bone to grow in thickness come primarily from the
- periosteum
 - epiphyseal plate
 - articular cartilage
 - endosteum
34. Diploë are found in
- upper extremity bones
 - lower extremity bones
 - skull bones
 - finger/toe bones
35. The basic structure of spongy bone is of
- haversian systems
 - trabeculae
 - osteons
 - concentric lamellae
36. The cell responsible for resorbing bony matrix is the
- osteocyte
 - osteoblast
 - osteoclast
 - chondroblast
37. The organic component of bone matrix is
- hydroxyapatite
 - glycosaminoglycans
 - osteoid
 - parathormone
38. Cartilage grows in two ways, appositional and interstitial. Appositional growth is exemplified by:
- growth at the epiphyseal plate.
 - secretion of new matrix against existing cartilage.
 - along the edges only.
 - lengthening of hyaline cartilage.

39. Hematopoiesis occurs in the red marrow; what is hematopoiesis?
- endochondral ossification
 - storage of fat by adipocytes
 - secretion of glycosaminoglycans by mesenchymal cells
 - blood-cell formation
40. The periosteum is secured to the underlying bone matrix by dense connective tissue called:
- Volkman's canals
 - a bony matrix with hyaline cartilage.
 - Sharpey's fibers
 - the struts of bone known as spicules.
41. Place the following in correct sequence from simplest to most complex (1) molecules; (2) atoms; (3) tissues; (4) cells; (5) organ
- 1-2-3-4-5
 - 2-1-4-3-5
 - 2-1-3-4-5
 - 1-2-4-3-5
42. The single most abundant chemical substance of the body, accounting for 60 to 80% of body weight, is:
- oxygen.
 - protein.
 - water.
 - hydrogen.
43. A solution that has a pH of 2 could best be described as being
- acidic
 - basic
 - neutral
 - slightly acidic
44. The dermis:
- is an avascular connective tissue layer.
 - has two distinct layers.
 - lacks sensory corpuscles and glands.
 - is where melanocytes are found.
45. Acne is a disorder associated with
- sweat glands
 - sebaceous glands
 - Meibomian glands
 - ceruminous glands
46. Which of these is not part of the dorsal cavity?
- cranial cavity
 - thoracic cavity
 - spinal cord
 - vertebral cavity
- Questions 47-54 are True/False.
Answer {a} if true, {b} if false.
47. In osmosis, movement of water occurs toward the solution with the lower solute concentration.
48. The protein found in large amounts in the outermost layer of epidermal cells is collagen.
49. The greater the concentration gradient of a substance, the faster the rate of diffusion of that substance.
50. The finger and toe nails are modifications of the skin and are homologous with the hooves of horses, cattle, and deer.
51. Facilitated diffusion always requires a carrier protein.
52. Because it is composed of fibrocartilage, a symphysis is considered a fibrous joint.
53. Bursae are sacs of synovial membrane creating absolute discontinuities between two structures.
54. Movement of the ball-and-socket joint at the hip has a greater range of motion than the shoulder joint.

55. The xiphisternal j in an 15-year old male is a
- synostosis
 - syndesmosis
 - synchondrosis proper
 - symphysis
 - synovial
56. The distal tibiofibular j is a
- synostosis
 - syndesmosis
 - synchondrosis proper
 - symphysis
 - synovial
57. Rib 1 costal cartilage forms a
- synostosis
 - syndesmosis
 - synchondrosis proper
 - symphysis
 - synovial
58. A gomphosis joint is called a
- synostosis
 - syndesmosis
 - synchondrosis proper
 - symphysis
 - synovial
59. The interphalangeal jj permit
- flexion/extension (including dorsiflexion/plantarflexion)
 - abduction/adduction
 - rotation
 - a & b
 - a, b, & c
60. The talocrural j ["ankle"] allows
- dorsiflexion/plantarflexion
 - pronation/supination
 - abduction/adduction
 - a & b
 - a, b, & c
61. Carpometacarpal j I allows
- flexion/extension
 - abduction/adduction
 - opposition
 - a & b
 - a, b, & c

Name (printed): _____

email address: _____

Signature: _____

ID Number: xxx-xx-_____

- | | | |
|-----------|-----------|-----------|
| 1. _____ | 21. _____ | 41. _____ |
| 2. _____ | 22. _____ | 42. _____ |
| 3. _____ | 23. _____ | 43. _____ |
| 4. _____ | 24. _____ | 44. _____ |
| 5. _____ | 25. _____ | 45. _____ |
| 6. _____ | 26. _____ | 46. _____ |
| 7. _____ | 27. _____ | 47. _____ |
| 8. _____ | 28. _____ | 48. _____ |
| 9. _____ | 29. _____ | 49. _____ |
| 10. _____ | 30. _____ | 50. _____ |
| 11. _____ | 31. _____ | 51. _____ |
| 12. _____ | 32. _____ | 52. _____ |
| 13. _____ | 33. _____ | 53. _____ |
| 14. _____ | 34. _____ | 54. _____ |
| 15. _____ | 35. _____ | 55. _____ |
| 16. _____ | 36. _____ | 56. _____ |
| 17. _____ | 37. _____ | 57. _____ |
| 18. _____ | 38. _____ | 58. _____ |
| 19. _____ | 39. _____ | 59. _____ |
| 20. _____ | 40. _____ | 60. _____ |
| | | 61. _____ |

1. a _____
2. d _____
3. a _____
4. b _____
5. a _____
6. d _____
7. c _____
8. a _____
9. d _____
10. b _____
11. d _____
12. d _____
13. d _____
14. a _____
15. c _____
16. d _____
17. b _____
18. b _____
19. a _____
20. b _____
21. d _____
22. c _____
23. d _____
24. a _____
25. b _____
26. c _____
27. b _____
28. c _____
29. c _____
30. d _____
31. d _____
32. b _____
33. a _____
34. c _____
35. b _____
36. c _____
37. c _____
38. b _____
39. d _____
40. c _____
41. b _____
42. c _____
43. a _____
44. b _____
45. b _____
46. b _____
47. b _____
48. b _____
49. a _____
50. a _____
51. a _____
52. b _____
53. a _____
54. b _____
55. d _____
56. b _____
57. c _____
58. b _____
59. a _____
60. a _____
61. e _____