

1. The study of anatomy is called ...
2. The study of physiology is called ...
3. The study of the cell is called ...
4. The study of the tissues is called ...
5. Developmental anatomy is also called ...
6. Any type of surgery (e.g. arthroscopic surgery, cholecystectomy) is considered ...
7. Another name of macroscopic anatomy is ...
8. The production of hormones is done by _____. The study of the organs which produce hormones is called _____.
9. The state of the body's inner balance is called ...
10. An opposite response to a stimulus is called ...
11. When the action of the stimulus is increased, the phenomenon is called ...
12. Know the different levels of the body organization from cell to organism.
13. The plane which divides the body equally into left and right is called ...
14. The plane which divides the body into anterior and posterior is called ...
15. The plane which divides the body into cross section is called ...
16. Describe anatomical position.
17. What is the difference between:
 - a. Anterior and posterior
 - b. Medial and lateral
 - c. Prone and supine
18. What is the difference between midsagittal and parasagittal?
19. The big toe is ___ to small toes. The head is ___ to the neck. The elbow is _____ to the forearm.
20. The boundary between the thoracic cavity and the abdominal cavity is a muscle called ...
21. In what cavity do you find:
 - a. Ovaries
 - b. Spleen
 - c. Stomach
 - d. Lung
22. If a solution has a pH of 2, that solution will be considered ...
23. If a solution has a pH of 7, that solution will be considered as ...
24. If a solution has plenty of hydrogen and a pH below 7, that solution is ...
25. If a solution has plenty of hydroxyl (OH) and a pH above 7, the solution is ...
26. If two elements have the same number of protons or atomic number but different atomic weight, these two elements are ...
27. Chemistry-wise, all the enzymes are ...
28. The peptide bonds are found between ...
29. The building blocks for proteins are called ...
30. The most abundant inorganic compound is ...
31. All the steroids have _____ carbon rings.
32. The class of lipids involved in cell membrane are called ...

33. The building block for nucleic acids is called ...
34. The only sugar found in DNA is ...
35. The only sugar found in RNA is ...
36. In DNA, adenine goes hand in hand with ...
37. In RNA, adenine goes hand in hand with ...
38. If an element has two electrons in its first layer and 8 electrons in its second layer, that element will be considered ...
39. Two elements with similar number of protons but different number of neutrons are ...
40. Any nucleotide is made up of (a) _____, (b) _____, (c) _____.
41. The single sugars like glucose, fructose, or galactose are classified as ...
42. Chemistry-wise, enzymes are ...
43. Give three examples of non-invasive technique.
44. In the cell, the genetic material is located in _____ and precisely _____.
45. The pleural cavity contains ...
46. Differentiate axial and appendicular body parts.
47. The forearm is _____ to the wrist. The wrist is _____ to the forearm.
48. What are the components of the nervous system?
49. Your chest is _____ to the lungs.
50. The loss of an electron is called ...
51. In what cavity are the urinary bladder and ovaries located?
52. Define catabolism and anabolism.
53. Cite two major parts of an atom.
54. A compound which has a ratio of
C H O
1 2 1
will most likely be ...
55. What are the nucleic acids and what do they do?
56. Pairing of electrons is called ...
57. Bonds between two opposite ions is called ...
58. The bonds found in DNA are called ...
59. Building blocks of nucleic acids are ...
60. What is the difference between organic and inorganic compounds?
61. What is the difference between cations and anions?
62. Classify these substances: sucrose, glucose, salt, water, sodium hydroxide.
63. What does "slightly acidic" or "slightly alkaline" solutions mean?
64. Describe a typical triglyceride.
65. What does RNA do?
66. In what class do leukotrienes belong?
67. A linear sequence of amino acids is ...
68. Similar group of cells is called ...
69. The eye is _____ to the nose.
70. Define valence.
71. What is a disaccharide?
72. In anatomical position, is your head caudal or cranial to your lower back, and why?

73. When you are sleeping on your back, in what position are you in, supine or prone?
74. When you are laid on your back, are you in a supine or prone position?
75. Are prostaglandins (a) steroids, (b) eicosanoids, or (c) phospholipids?
76. The saliva has a pH of 6.8. Is it slightly acidic, or is it a strong acid?
77. When you in anatomical position, is your palm in supine or prone position? Are your palms facing anteriorly, or posteriorly?
78. What organ(s) is found in the pericardial cavity?
79. What do leukotrienes do?
80. What is the main function of an enzyme (two word answer).

1. The outer boundary of the cell is...
2. The fluid portion of the cytoplasm is called...
3. The movement of substances according to their concentration gradient is labeled as...movement
4. When water moves from area of high concentration in water to area of low concentration in water, that traffic is called...
5. What type of solution will cause hemolysis of red blood cells? And why?
6. What is the difference between hypertonic solution and isotonic solution?
7. What type of solution is appropriate for perfusion during dehydration and why?
8. What does simple diffusion imply? Give two examples to illustrate your answer.
9. What is the main function of these organelles?
 - a. Mitochondria
 - b. Golgi apparatus
 - c. Lysosome
 - d. polysomes
10. In which bodily organs will you be able to identify peroxisomes? What do they do?
11. The rough endoplasmic reticulum are involved in _____ synthesis.
12. The smooth endoplasmic reticulum are involved in _____ synthesis.
13. The main engine of the cell is...
14. In the nucleus, the genetic material is found in the...
15. What structures are involved in messenger RNA production?
16. What is the main function of M-RNA?
17. Within the cell, where does the fat storage take place?
18. Which structure(s) are involved in the formation of the mitotic apparatus during cell division?
19. During mitosis, what happens to chromatid during metaphase and anaphase?
20. Define transcription and translation.
21. What is the difference between codons and anticodon?
22. Explain briefly elongation during synthesis.
23. Compare somatic cell division and meiosis.
24. Do different types of stratified epithelium have blood vessels? How do they receive their nutrients?
25. What type of tissue displays a basement membrane?
26. When an epithelium has a single layer of flat cells it will be classified as...
27. If an epithelium tissue has cells of different heights sitting on a single basement membrane, that epithelium will be considered...
28. When an epithelium tissue subject to change is called...

29. An epithelial tissue which has seven layers full of cells with the top layer made of flat cells is classified as...
30. A ductless organ which releases all its products directly into the blood stream is classified as _____ organ.
31. What is the main difference between an endocrine gland and an exocrine gland?
32. A tissue which has cells and an extracellular matrix made up of fibers and ground substance will be categorized as...
33. What type of ground substance make up
 - a. Bones
 - b. Cartilage
 - c. Blood
34. What type of connective tissues are tendons and ligaments? Explain your argument.
35. What is mesenchyme? What type of tissue derives from it?
36. Give two examples of embryonic connective tissue.
37. What do you call the cells that you find in hyaline cartilage?
38. Structure wise, what is the difference between fibro cartilage and elastic cartilage?
39. What do you call the connective tissue which surrounds a cartilage?
40. The largest organ in the body is called the ...
41. The stratum geminativum is made up stratum basale and...
42. The uppermost layer of the epidermis is called...
43. This layer of the epidermis called _____ is only found in the soles and palms.
44. The layer sandwiches between the epidermis and the hypodermis is called...
45. The other name of the hypodermis is...
46. The type of connective tissue found in the papillary layer of the dermis is...
47. The corpuscle of light touch found on the papillary dermis is called...
48. What type of muscles are arrector pili? What do they do?
49. What type of connective tissue is found in the reticular dermis?
50. The sudoriferous glands are called _____ what do they do?
51. The odoriferous glands are called _____ glands. In which part of the body are prevalent?
52. What sweat glands are involved in perspiration _____?
53. What skin glands release pheromones?
54. Oil glands are called...
55. In a cross section, the innermost layer of the skin is...
56. How does the skin involved in the body thermoregulation?
57. What vitamins are synthesized when the UV light strikes the skin?
58. All these structures are associated with the hair, except...
59. What are the two types of glands found in the skin?
60. What is keratin?
61. Why does the skin develop in tolerance to cold weather and becomes dry during all age?
62. Name the structure which make up the integumentary system

1. What bone bears the body weight when you sit down.
2. The two leg bones are fibula and ...
3. The anterior crest is located on which bone(s)?
4. The other name of the clavicle is ...
5. The trochanter is a process found on the ...
6. These bones numbered below: are they facial or cranial?
 - a. Zygomaticus
 - b. Parietal
 - c. Occipital
 - d. Lacrimal
7. The hollow space within the bone is called ...
8. The longest bone in the body is ...
9. The arm bone is called ...
10. The thigh bone is also called ...
11. The hip joint is composed of the acetabulum and ...
12. The three fused bones which make up the hipbone (coxae) are ...
13. Name the different processes found on the bone and define them.
14. What bones make up the axial skeleton?
15. Give two examples of socket joints.
16. The shin bone is also called ...
17. What type joints are in sutures and gomphosis ?
18. What are the four components of a synovial joint?
19. The pelvis is made up of which bones?
20. Membrane (soft spot) found on the skull of the newborn are called ...
21. An immobile joint is called ...
22. A movable joint is called ...
23. Give an example of ball in socket joint.
24. Define diaphysis, metaphysis, and epiphysis.
25. Give an example of a cartilaginous joint.
26. Define periosteum and its connections to compact bone.
27. What is the difference between ligament and tendons.
28. In which joint(s) do you find meniscus or menisci?
29. The hand bones are called ...
30. The finger bones are called ...
31. What is the difference between syndesmosis and symphysis?
32. What are the two main hormones involved in calcium regulation between bone and blood?
33. What structures make up the appendicular skeleton?
34. What structures allow children to grow length-wise?
35. What structures allow the bones to grow width-wise?

36. Describe tendon sheath and define their roles.
37. Give two examples of a sesamoid bone. What do they do?
38. What is a lacuna?
39. What is the difference between the atlas and the axis?
40. In the adult, the spinal cord stops at which level?
 - a. L1 and L2
 - b. L2 and L3
 - c. L3 and L4
 - d. L4 and L5
41. What do osteoblasts do and where do they reside?
42. What is the origin of osteoclasts and what do they do?
43. When osteogenesis (ossification) derive from: a) mesenchyme, b) cartilage, the processes are characterized respectively as ... and...
44. Give two examples of :
 - a. Uniaxial joint
 - b. Multiaxial joint
 - c. Biaxial joint
45. Give an example of a pivot joint and explain why it is called so.
46. What protrusion on the axis allows the atlas to rotate?
47. What bones make up:
 - a. Coronal suture
 - b. Lambdoid suture
 - c. Squamosal suture
 - d. Sagittal suture
48. What bones make up the pectoral girdle?
49. What bone has a structure called manubrium and xiphoid process.
50. Define: flexion, extension, supination, pronation, adduction, abduction, circumduction.
51. The basic units of the compact bone is called ... or ...
52. Does the periosteum cover the articular cartilage?
53. Where in the bone is the red bone marrow located?
54. Where in the bone is the yellow bone marrow located?
55. What is "endosteum"?
56. What is the difference between spongy bone and compact bone?
57. What is a bursa? Where are bursa(es) located?
58. The bone is a specialized connective tissue because its matrix is composed of ...
59. What are the bones which make up the floor of your skull?
60. Name all the bones which make up your orbit (eye socket).

1. The cytoplasm of the skeletal muscle cell is called ...
2. The cell membrane of the skeletal muscle cell is called...
3. What are the four properties of the muscle?
4. Explain the diverse functions of the muscle tissue.
5. A skeletal muscle cell can also be called...
6. A group of muscle cells is called...
7. The connective tissue which surrounds the myofiber is called...
8. What is the difference between epimysium and perimysium?
9. What is the other name of the smooth muscle?
10. Name five organs where you can find smooth muscle.
11. What is the difference between myosin and actin?
12. The basic morpho-functional unit of the skeletal muscle cell is called...
13. What type of filaments makes up the "I" band?
14. The "A" band is made up of...
15. Define a motor unit.
16. What is oxygen debt?
17. What is the underlying reason of muscle fatigue?
18. Explain the law of "all or none".
19. Define refractory period.
20. What controls the intensity of muscle contraction?
21. Define synaptic cleft.
22. Compare myoneural junction and synapse.
23. The connection between a muscle and a bone is called...
24. What chemical compounds supply energy to the muscles?
25. What is the difference between slow twitch and fast twitch muscles?
26. What is a twitch?
27. Contrast isometric and isotonic contractions.
28. The staircase contraction is called...
29. What chemical are stored by sarcoplasmic reticulum?
30. What are cross-bridges?
31. Explain what tropomyosin and tropomin do to the myofilament binding sites.
32. What type of muscle generates plenty of ATP, and works for longer time without undergoing fatigue?
33. What chemicals are released by the sarcoplasmic reticulum when the transverse tubules are depolarized?
34. Know the origin, insertion, and function of the muscles of facial expression.
35. Name muscles which make up the rotator cuff.
36. What type of myofiber is found in the following, fast or slow twitch?
 - a. Eyelids
 - b. Fingers
 - c. Latissimus dorsi
 - d. Calf muscle
 - e. Hand
37. Name all the quadriceps muscles.

38. Name all the hamstring muscles.
39. Contrast uniaxial, biaxial, and multiaxial. Give examples.
40. Contrast primary mover (agonist), antagonist, and fixation.
41. What are these muscles:
 - a. Trumpeter muscle
 - b. Kissing muscle
 - c. Taylor muscle
 - d. Smiling muscle
 - e. Lifter of the upper eyelid muscle
 - f. Mastication muscle
42. The two main inspiratory muscles are ...
43. The other name of skeletal muscle is ... Explain the reason why this type of muscle is named that way?
44. The heart muscle is called ...
45. The structure which allows the skeletal muscle to propagate its power from the site of origin to the other heart chamber is...
46. What type of chemicals control the speed of heart rate.
47. The other name of sequential movement of the smooth muscle is called...
48. What does tonicity mean?
49. What are the main components which make up the central nervous system?
50. The basic unit of the nervous system is called the ...
51. The ability of the neuron to respond to a stimulus is ...
52. What is the difference between afferent and efferent neurons?
53. Name all the properties of the neuron.
54. Give five examples of neurotransmitters.
55. What is the main function of the myelin sheath?
56. The wave of depolarization that spreads along the neuron is also called...
57. What do neurotubules do?
58. What is the function of the nissl bodies? Nissl bodies are...
59. The bulging ends of the axon terminal are called...
60. Contrast dendrites and axons.
61. What do node of ranvier do?
62. What is the difference between IPSP and EPSP?
63. The autonomic nervous system is made up of...
64. Establish the difference between somatic and visceral peripheral nervous system.
65. Contrast parasympathetic and sympathetic nervous system.
66. What do oligodendrocytes do?
67. What are the functions of the different type cells which make up the neuroglia?
 - a. Astrocytes
 - b. Schwann cells
 - c. Microglia
 - d. Ependymal cells
68. Define all of the following terms:
 - a. Adduction
 - b. Abduction
 - c. Pronation
 - d. Supination
 - e. Flexion
 - f. Extension
 - g. Levator
 - Depressor
69. Contrast pennates fusiform and strap muscles?
70. What is an aponeurosis?

BIOL 2401 Lecture FINAL EXAM REVIEW:

1. The plane that divides the body into anterior and posterior portions is called:
 - a) Midsagittal plane
 - b) Coronal plane
 - c) Transverse plane
 - d) Oblique plane
 - e) Horizontal plane
2. The plane that divides the body equally (symmetrically) into left and right is:
 - a) Cross sectional plane
 - b) Transverse plane
 - c) Parasagittal plane
 - d) Midsagittal plane
 - e) Horizontal plane
3. A transverse plane separates the body into:
 - a) Anterior and posterior portions
 - b) Superior and inferior portions
 - c) Unequal and left portions
 - d) Equal left and right portions
 - e) Rostral and perpendicular portions only
4. The study of the body structure is called:
 - a) Physiology
 - b) Neurobiology
 - c) Anatomy
 - d) Parasitology
 - e) Immunology
5. Anatomical position implies all these statements, except:
 - a) Arms hanging along the sides of the body
 - b) Body is standing erect and facing anteriorly
 - c) Palms are in pronation
 - d) Palms are in supination or facing anteriorly
 - e) Feet are held together
6. When describing any region of the body, the appropriate position is called:
 - a) Physiological position
 - b) Anatomical position
 - c) Medial position
 - d) Prone position

- e) Anatomical Position
7. What direction is the sternum to your Ribs?
- a) Posterior
 - b) Anterior
 - c) Lateral
 - d) Medial
 - e) Superficial
8. The breast are _____ to the navel
- a) Proximal superficial
 - b) Superior an lateral
 - c) Medial and distal
 - d) Visceral and superficial
 - e) Lateral and inferior
9. The directional term, which means: far away from the midline is _____.
- a) Medial
 - b) Superior
 - c) Caudal
 - d) Lateral
 - e) Visceral
10. Developmental anatomy implies:
- a) Histology
 - b) Pathology
 - c) Embryology
 - d) Neurobiology
 - e) MRI
11. The directional term that means close to the body's midline is:
- a) Superficial
 - b) Palmar
 - c) Plantar
 - d) Medial
 - e) Radial
12. The study of the body's function is called:
- a) Psychology
 - b) Anthropology
 - c) Sexology
 - d) Physiology
 - e) Myology only

13. Matching: Connect these Organs to their respective cavity

- | | |
|--------------------|---------------------|
| a) Spleen | 1) abdominal cavity |
| b) Gallbladder | 2) Pelvic cavity |
| c) Bronchus | 3) Pleural Cavity |
| d) Liver | 4) Mediastinum |
| e) Ovaries | 5) Spinal cavity |
| f) Pancreas | 6) Pericardium |
| g) Brain | 7) Pleural cavity |
| h) Heart | 8) Thoracic cavity |
| i) Lungs | 9) Nasal Cavity |
| j) Stomach | 10) Maxillary Sinus |
| k) Appendix | |
| l) Urinary Bladder | |

14. Direction wise, the pinky is _____ to the thumb.

- a) Medial
- b) Superficial
- c) Visceral and cranial
- d) Lateral
- e) Caudal

15. Direction wise, the big toe is _____ to the other toes.

- a) Lateral
- b) Visceral only
- c) Distal and proximal
- d) Medial
- e) Posterior
- f) Anterior

16. The ability of the body to maintain a constant (stable) internal environment is called:

- a) Immunology
- b) Homo sapiens
- c) Hemorrhage
- d) Homeostasis
- e) Chemotherapy

17. The inspiratory muscle that separates the thoracic cavity from the abdominal cavity is:

- a) Internal muscle
- b) Rectus abdominus
- c) Serratus anterior

- d) Diaphragm
- e) Iliopsoas

18. The sum of all the chemical reactions taking place in the body are called:

- a) Anabolism only
- b) Catabolism only
- c) Metabolism oxidation only
- d) Dehydration or hydrolysis only

19. The patellar region is _____ to the popliteal region.

- a) Posterior
- b) Lumbar
- c) Cervical
- d) Anterior
- e) None of the above

20. The level of organization made up two or more organs that work together to perform a specific function is called:

- a) Cell
- b) System
- c) Organism
- d) Tissue
- e) Molecule

21. The level of organization made up of two or more tissues that work together to perform a specific function is called:

- a) Organ
- b) Cell
- c) Compound
- d) Organism
- e) System

22. The positively charged particles found in the nucleus of an atom are called:

- a) Neutrons
- b) Protons
- c) Electrons
- d) Isotopes
- e) Radioisotopes

23. Atoms made up of the same number of protons but different number of neutrons is called:

- a) Ions
- b) Isotopes

- c) Atomic number
- d) Cations
- e) Anions

24. Atoms that have the same atomic number but different atomic mass is called:

- a) Stereotype
- b) Covalent bonds
- c) Isotopes
- d) Isometric contraction
- e) Isotonic contraction

25. The bonds which result from the link between two ions of opposite charges is called:

- a) Ionic bond
- b) Covalent polar
- c) Covalent non polar
- d) Hydrogen bond
- e) St. Philip's bond

26. The most abundant inorganic compound in your body is:

- a) Sodium chloride
- b) Glucose
- c) Fructose
- d) Water
- e) Starch

27. All these substances are hydrophilic, except:

- a) Glucose
- b) Proteins
- c) Salts fructose
- d) Triglycerides

28. All these organic compounds are hydrophobic, except:

- a) Triglycerides
- b) Neutral fats
- c) Sucrose
- d) Cholesterol
- e) Polyunsaturated fat

29. Match these substances:

- a) Gastric juices pH (1.5-2.5)
- b) Saliva pH (6.5-6.8)
- c) Sperm pH (7.1-7.4)
- d) Blood pH (7.35-7.45)
- e) Pure Water pH (7)
- f) Wine pH (2.4-3.5)
- g) Anti-acid pH (10.5)
- h) Milk pH (6.3-6.6)
- i) Urine pH (5.5 – 8)

- 1. Neutral
- 2. Strong Acid
- 3. Slightly Acidic
- 4. Slightly Alkaline
- 5. Strong Alkaline

30. The Negatively Charged particles of an atom are identified as:

- a) Protons
- b) Electrons
- c) Neutrons
- d) Compounds
- e) Cells

31. A carbohydrate made up of a repetitive sequence of monosaccharides will be identified as:

- a) Glucose
- b) Fructose
- c) Galactose
- d) Polysaccharides
- e) Amino acids

32. This Polysaccharide, used by the skeletal muscle and the liver, as a storage form for Glucose is:

- a) Starch
- b) Cellulose
- c) Creatine phosphate
- d) Glycogen
- e) Lactose

33. The building block for protein is:

- a) Fatty acids
- b) Galactose
- c) Amino Acids
- d) Deoxyribose
- e) Carbon monoxide

34. Chemistry wise, all enzymes are:

- a) Polysaccharides
- b) Proteins
- c) Lipid
- d) Nucleic acids
- e) Inorganic compounds

35. Proteins are, also, called polypeptides

- a) True
- b) False

36. The Linear sequence of amino acids results in:

- a) Primary structure
- b) Secondary structure
- c) Tertiary structure
- d) Quaternary structure

37. A sick patient who has lost fluid and electrolytes will be deficient in all, except:

- a) Water
- b) Potassium
- c) Sodium
- d) Lipids
- e) Chloride

38. Grandpa peanut is diabetic; the doctor prescribes him daily shots of insulin. He prefers to take his insulin orally. The doctor told him that he couldn't do it orally because your stomach's enzymes will hydrolyze the peptide bonds of your insulin. Grandpa has never taken a Chemistry course. Therefore, he seeks your opinion. The starting point of your answer will be that insulin is made up of:

- a) Starch
- b) Cellulose
- c) Protein
- d) Nucleic acid
- e) Saturated fats

39. The main energy supplier for the cell is:

- a) Big Mac
- b) Whopper
- c) Subway Sandwich
- d) ATP
- e) Gorditas

40. The lipids that originate from cholesterol are called:

- a) Steroids

- b) Prostaglandins
 - c) Omega-3
 - d) Monosaturated Fats
 - e) Deoxyribonucleic acid
41. If a fatty acid lack double bonds, it will be classified as:
- a) Unsaturated fat
 - b) Polyunsaturated fat
 - c) Monounsaturated fat
 - d) Disaccharides
 - e) Saturated fat
42. This class of lipids called _____ makes up the fluid portion of the cell membrane
- a) Phospholipids
 - b) Neutral fat
 - c) Glycerol
 - d) Triglycerides
 - e) Estrogen and Progesterone
43. None of these organic compounds are eicosanoids, except
- a) Leukotriene and Prostaglandins
 - b) Testosterone and estrogens
 - c) Sucrose and maltose
 - d) Cellulose and Lignin
 - e) DNA and RNA
44. In DNA, Adenine binds to Thymine and Guanine binds to Cytosine.
- a) True
 - b) False
45. In RNA, Adenine binds to Uracyl and the Pentose is Deoxyribose.
- a) True
 - b) False
46. During transcription, synthesis of mRNA, which codon will result from: TGC and ATT
- a) GGC/UAU
 - b) TUA/ GCA
 - c) GGG/UUU
 - d) ACG/UAA
 - e) GGT/TGC
47. During synthesis, these two processes are involved:
- a) Transgression and translation

- b) Replication and transcription
 - c) Duplication and replication
 - d) Transcription followed translation
 - e) Translation followed by transcription
48. Water is an inorganic compound because:
- a) It lacks carbon
 - b) It contains carbon
 - c) It contains carbon dioxide
 - d) It has nitrogen and carbon
 - e) Its pH is neutral
49. The organelle involved in protein synthesis is:
- a) Smooth Endoplasmic reticulum
 - b) Lysosome
 - c) Rough Endoplasmic Reticulum
 - d) Cilia
 - e) Centriole
50. The organelle involved in steroid production is:
- a) Smooth Endoplasmic Reticulum
 - b) Nucleus
 - c) Ribosomes
 - d) Flagellum
 - e) Nucleopore
51. The phase of Mitosis involved in the formation of chromosomes from chromatin, disappearance of nuclear membrane and formation of the mitotic spindle is called:
- a) Prophase
 - b) Metaphase
 - c) Anaphase
 - d) Cytokinesis
 - e) Telophase
52. Among these cells, which ones are anucleated and, therefore, they cannot multiply.
- a) Fibroblast
 - b) Osteoprogenitor cells
 - c) Hemocytoblast
 - d) Red blood cells
 - e) White Blood cells
53. Cell movement which does NOT require ATP is classified as:
- a) Passive movement

- b) Active movement
 - c) Receptor mediated endocytosis
 - d) Excytocytois
 - e) Pinocytosis
54. The movement of water across a semipermeable membrane from an area of higher concentration to an area of lower concentration is called:
- a) Facilitated diffusion
 - b) Osmosis
 - c) Exocytosis
 - d) Active transport
 - e) Phagocytosis
55. The genetic material in the cell is stored in the:
- a) Nucleus
 - b) Lysosome
 - c) Peroxisome Golgi Apparatus
 - d) Cilia
56. Which statement is true? All the connective tissue have:
- a) Extracellular matrix and cells
 - b) Ground substance and epithelial tissue only
 - c) Neurons and osteoclasts only
 - d) Epithelium mixed with muscle fibers
 - e) Lack of blood
57. Which statement is UNTRUE? Epithelial tissue:
- a) Have a basement membrane
 - b) Are made up of clustered of cells
 - c) Lack blood vessels
 - d) Have blood vessels
58. Arreolar Connective tissue is found in the:
- a) Papillary layer of the skin
 - b) Reticular layer of the skin
 - c) Stratum corneum of the skin
 - d) Hypodermis and stratum spinosum of the skin
 - e) Ligaments and tendons
59. The epithelium, which has all of it cells on the basement membrane, but not all of them reach the surface, and gives an impression of a multilayerd tissue will be classified as:
- a) Transitional epithelium
 - b) Pseudostratified epithelium

- c) Simple squamous
- d) Ciliated columnar epithelium
- e) Stratified columnar epithelium

60. A connective tissue, uniquely made up of Chondrocytes, perichondrium and their extracellular matrix does not exhibit any presence of collagen fibers would be categorize as:

- a) Hyaline cartilage
- b) Elastic cartilage
- c) Fibrocartilage
- d) Thrombocytes
- e) Microglia and astrocytes

61. The inner layer of the hair is:

- a) Cortex
- b) Medulla hair bulb
- c) Cuticle
- d) Subcutaneous

62. The glands which become active during puberty and secrete pheromones are:

- a) Sebaceous glands
- b) Eccrine sweat glands
- c) Bartholin glands
- d) Bulbourethral glands
- e) Apocrine sweat glands

63. The skin is made up of three layers. The most superficial layer (not sublayer) is called:

- a) Stratum corneum
- b) Epidermis
- c) Hypodermis
- d) Subcutaneous
- e) Reticular dermis

64. These two layers make up the Stratum Germinativum:

- a) Stratum Corneum and Lucidum
- b) Stratum Spinosum and Granulosum
- c) Startum Spinosum and Basale
- d) Stratum Piapillary and Equinae
- e) Stratum Granulosum and Lucidum

65. The largest organ in the body is:

- a) Spleen

- b) Skin
- c) Lungs
- d) Heart
- e) Spinal Cord

66. The type of active cell movement where a cell engulf the bacteria is:

- a) Pinocytosis
- b) Phagocytosis
- c) Exocytosis
- d) Apoptosis
- e) Lalapulusa

67. The connective tissue which attaches the muscle to the bone is called:

- a) Ligament
- b) Tendon
- c) Oligodendrocytes
- d) Cartilage
- e) Myelin sheath

68. What fat-soluble vitamion is synthesized by the skin when one is exposed to the sun:

- a) Vitamin A Retinol
- b) Vitamin B1 Thiamin
- c) Vitamin B2 Riboflavin
- d) Vitamin B12 Cynocobalamin
- e) Vitamin D Calcitriol

69. Sweet baby Peanut lives in the East coast where they have less sunny days. During the year, his parents are concerned about Rickett. Thus, they have to make sure his daily intake of Vitamin ____ is adequate.

- a) Vitamin C Ascorbic Acid
- b) Vitamin B4 Pantothenic Acid
- c) Vitamin B3 Niacin
- d) Vitamin D Calcitriol
- e) Vitamin E Tocopherol

70. The integumentary system perform all of these functions, except:

- a) Production of Vitamin C
- b) Protection against UV light
- c) Protection against infection
- d) Thermoregulation
- e) Blood storage and water excretion

71. The Nerve ending sensitive to deep pressure is:
- a) Proprioceptors
 - b) Meissner's corpuscle
 - c) Pressoreceptors
 - d) Pacinian corpuscle
 - e) Baroreceptor
72. Good examples of sesamoid bones would be:
- a) Femur and tibia
 - b) Ulna and radio
 - c) Phalanges and metacarpal bones
 - d) Patella and Pisiform process
 - e) Ossa coxa
73. The two hormones which regulate calcium are:
- a) Calcitonin and Parathyroid hormone
 - b) Estrogen and Glycogen
 - c) Aldosterone and Glucagon
 - d) Testosterone and Oxytocin
 - e) Melatonin and Melanine
74. Which of these bones is part of the appendicular skeleton:
- a) Skull
 - b) Vertebra prominens
 - c) Ribs
 - d) Atlas
 - e) Phalanges
75. The femur, the tibia and the metatarsal bones are examples of:
- a) Sesamoid bones
 - b) Long bones
 - c) Short bones
 - d) Flat bones
 - e) Irregular bones
76. The intramembranous ossification begins from:
- a) Cartilage
 - b) Mesenchyme
 - c) Mucous connective tissue
 - d) Elastic connective tissue
 - e) Squamous epithelium
77. When the width (diameter) of the bone increases, the activity is taking place in the:
- a) Growth plates

- b) Metaphysis
 - c) Epiphyseal plate
 - d) Periosteum
 - e) Endosteum
78. The structure which allow the long bone to grow length wise is:
- a) Osteoclasts
 - b) Osteocytes
 - c) Osteoprogenitor cells
 - d) Growth plates
 - e) Osteoblast
79. The _____ are found in the juvenile bones and allow the bone to grow lengthwise:
- a) Epiphyseal plate
 - b) Fibroblasts
 - c) Osteoclast
 - d) Osteocytes
 - e) Osteoblast
80. When bone is formed from hyaline cartilage, the calcification is called:
- a) Endochondral
 - b) Calcification
 - c) Intramembranosus
 - d) Hemostasis
 - e) Myogenesis
81. The basic unit of compact bone is called:
- a) Haverisian system
 - b) Osteon
 - c) Haversian canal and lacunae
 - d) Sarcomere
 - e) A and B
82. The bone cells which destroy bone is called:
- a) Osteoclasts
 - b) Osteocytes
 - c) Staphylococcus Aureus
 - d) Osteoblasts
 - e) Pacillus Anthracis
83. The bone cells which produce the extracellular matrix is:
- a) Osteoblast
 - b) Osteocytes

- c) Osteogenic cells
 - d) Osteoclasts
 - e) Osteophytes
84. The pectoral girdle is made up of the clavicle and:
- a) Coccyx
 - b) Ilium
 - c) Ischium
 - d) Scapula
 - e) Carpus
85. The hipbones consist of:
- a) Ilium, pubis, and sternum
 - b) Mastoid process, coronoid process, and styloid process
 - c) Sacrum, ilium, and fibula
 - d) Ischium, pubis, ilium
 - e) Sternum, scapula, and acetabulum
86. The epiphyseal plate is located in the:
- a) Diaphysis
 - b) Epiphysis
 - c) Metaphysis
 - d) Perichondrium
 - e) Knee joint
87. The first and second cervical vertebra are respectively called:
- a) Atlas and axis
 - b) Axis and atlas
 - c) Sacrum and coccyx
 - d) Lumbar 1 and Lumbar 2
 - e) Vertebra prominens and acromion
88. A good example of "ball and socket" joint is:
- a) Hip joint
 - b) Shoulder joint
 - c) Knee joint
 - d) Gomphosis
 - e) Lambdoidal suture
89. Among these bones, which one is NOT a cranial bone:
- a) Sphenoid
 - b) Frontal
 - c) Zygomaticus
 - d) Ethmoid
 - e) Temporal

90. Which bones are NOT part of the appendicular skeleton:
- a) Femur, fibula, tibia
 - b) Phalanges, radius, ulna
 - c) Metacarpal bones, carpal bones, and humerus
 - d) Vomer, maxilla and mandible
100. In the human body, there are a total of:
- a) 14 phalanges
 - b) 56 phalanges
 - c) 28 phalanges
 - d) 42 phalanges
 - e) 10 phalanges
101. The sella turcica houses:
- a) Hypothalamus
 - b) Pineal gland
 - c) Thalamus
 - d) Pituitary gland
 - e) Foramen of Monroe or interventricular foramen
102. In the adult, the spinal cord stops at the level of:
- a) L3 and L4
 - b) L1 and L2
 - c) L5 and S1
 - d) S1 and coccyx
 - e) C7 and T2
103. Which statement is correct? A human body has normally:
- a) Seven cervical vertebrae
 - b) Fourteen thoracic vertebrae
 - c) Nine sacral vertebrae
 - d) 47 vertebrae
 - e) 24 vertebrae
104. A suture is a type of:
- a) Immovable joint called synarthrosis
 - b) Freely movable called syndesmosis
 - c) Slightly movable joint called saddle joint
 - d) Hinge joint
 - e) Synovial joint
105. Which of these joints is freely movable?
- a) Synovial joint
 - b) Amphiarthrosis intervertebral joint
 - c) Epiphyseal plate

- d) Sychondrosis
106. Bones united by dense connective tissue will form a joint called:
- a) Syndesmosis
 - b) Sychondrosis
 - c) Symphysis
 - d) Synarthrosis
 - e) Synovial joint
107. Any synovial joint consists of four structures: a synovial membrane lining, a synovial cavity, synovial capsule, ligament , and:
- a) Osteoarthritis
 - b) Articular cartilage
 - c) Sarcolemma
 - d) Adipose tissue
 - e) Neuroma
108. Anterior and Posterior cruciate ligaments are found in the:
- a) Wrist joint
 - b) Elbow joint
 - c) Olecranon process
 - d) Knee joint
 - e) Hip joint
109. In the forearm, the ulna and _____ run parallel in a supination position.
- a) Radius
 - b) Fibula
 - c) Femur
 - d) Humerus
 - e) Phalanges
110. The continual new bone by osteoblast, resumption of old bone by osteoclasts is called:
- a) Bone remodeling
 - b) Bone hydrolysis
 - c) Bone oxidation
 - d) Bone radiation
 - e) Bone segmentation
111. Which hormone induces hypocalcemia?
- a) Calcitonin
 - b) Thyroxin
 - c) Parathyroid hormone
 - d) Insulin

- e) Vasopressin
112. The best area for spinal tap in the children is between:
- a) C1 & C3
 - b) T9 & T10
 - c) L1 & L2
 - d) L3 & L4
 - e) L5 & S1
113. The epiphysis is either proximal or distal to metaphysis, and it's covered by hyaline cartilage.
- a) True
 - b) False
114. Meniscus and fibrocartilage pads are found in the:
- b) Elbow joint
 - c) Scapulo-humeral joint
 - d) Hip joint
 - e) Ankle joint
 - f) Knee joint
115. Skeletal muscle are:
- a) Striated, voluntary, attached to skeleton, contain myosin, actin, tropomyosin and troponin.
 - b) Found in the viscera, involuntary, and lack myosin and actin.
 - c) In the heart, myocardium, chordae tendinae and purkinje fibers
 - d) Uterus, arteries, and intestine
 - e) Arrector pili and subject to goose bumps
116. The connective tissue, which surrounds the fascicles, is:
- a) Endomyssium
 - b) Perimyssium
 - c) Epimyssium
 - d) Myofilament
 - e) Myofibril
117. One of these is NOT a property of muscle tissue:
- a) Generate Heat
 - b) Are Responsive to stimuli
 - c) Has the propensity to contract
 - d) Has the ability to extend
 - e) Produce cellulose and starch
118. Oxygen debt, lactic acid buildup, and reduction of ATP will result in:
- a) Muscle fatigue
 - b) Muscle hyperactivity

- c) Muscle strength increase
 - d) Anaerobic pathway and production of 36 ATP
 - e) All of the above statements are incorrect
119. The distance between Z line to Z line defines:
- a) Sarcomere or basic unit of the skeletal muscle
 - b) Motor unit and synaptic cleft
 - c) Myofiber and fascicle
 - d) Epineurium or Epimysium
 - e) H zone or M line
120. A motor unit is:
- a) A motor neuron and the synaptic cleft
 - b) A motor neuron and all muscle fibers that it innervates
 - c) Sarcolemma surrounding sarcoplasm
 - d) The combination of A band and I band
 - e) Sarcoplasmic reticulum and its connection with T Tubules
121. The storage site of Ca^{2+} in the myofiber is:
- a) Motor end plate
 - b) Sarcoplasmic reticulum
 - c) Sarcolemma and mitochondria
 - d) Troponin and myosin
 - e) Sarcolemma and synaptic cleft
122. Among all these cells, only cell is multinucleated is:
- a) Smooth muscle cells
 - b) Cardiocytes
 - c) Red blood cell (Erythrocyte)
 - d) Myofiber and myofilaments
123. The integrated discs are junctions found uniquely between adjacent cells of the muscle cells are:
- a) Skeletal
 - b) Cardiac
 - c) Visceral
 - d) Voluntary
 - e) Smooth
124. Lady ToFu weighs 110 pounds, she tries to lift her Ford 350 by herself. Her muscle tone increases but the muscle length remains the same, this type of contraction will be considered:
- a) Isotonic
 - b) Treppe
 - c) Isometric

- d) Tetanus incomplete
 - e) Serotonin
125. The skeleton muscle is called striated because it contains:
- a) Alternating thick filaments myosin and thin filaments actin
 - b) Alternating thick filaments (actin) and thin filaments(myosin)
 - c) M line perpendicular to Z line
 - d) Can easily found in the uterus and arteries
 - e) Alternating microtubules made up of troponin and tropomyosin
126. Which of these statements is true.
- a) Smooth muscle are called visceral muscle and are involuntary
 - b) Smooth muscle are called striated muscle are involuntary
 - c) Smooth muscle have a specialized autorythmic pacemaker called sino atrial node
 - d) Smother muscle cannot undergo peristalsis
 - e) Smooth muscle and cardiac muscle are voluntary
127. The cytoplasm of the skeletal muscle cell is known as the _____
cell membrane of the skeleton muscle:
- a) Sarcoplasm/Sarcolemma
 - b) Neurolemma/Neuroplasma
 - c) Microglia/Astrocytes
 - d) Schwann Cells/Stratum Lucidum
 - e) Areolar connective/Cross Bridges
128. The moveable point of attachment of a muscle is identified as:
- a) Origin
 - b) Insertion
 - c) Abduction
 - d) Biaxial
 - e) Hinge
129. A muscle that helps another muscle to perform a smooth action is:
- a) Primary mover
 - b) Antagonist
 - c) Synergist
 - d) Acetabulum
130. Primary mover is equivalent to:
- a) Agonist
 - b) Synergist

- c) Antagonist
 - d) Aponeurosis
 - e) Pennate Muscle or ligament
131. Neuromuscular junction is a type of synapse.
- a) True b) False
132. A synapse can occur between a neuron and
- a) Gland
 - b) Myofiber
 - c) Neuron
 - d) All Above
 - e) Only B and C
133. All of these chemicals are neurotransmitters, except:
- a) GABA, Neuroepinephrine
 - b) Dopamine, Serotonin
 - c) Endorphin, Acetyl Choline
 - d) Endorphin, Epinephrine
 - e) Glycogen, cholesterol, and prostaglandins
134. The central nervous system consists of:
- a) Brain and spinal cord
 - b) Peripheral nervous system and schwann cells
 - c) Sensory and ascending neuron
 - d) Cranial nerves and spinal nerves
 - e) Afferent and sympathetic fibers
135. Monosynaptic reflex means:
- a) Sensory neuron → Interneuron → Motor neuron
 - b) Parenchyma → Stroma → Somatic membrane
 - c) Sensory → Parasympathetic → Sympathetic
 - d) Sensory → Motor
 - e) Neuroglia → Oligodendrocytes → Astrocytes → Knee Jerk → Lumbar plexus → Thalamus
136. Depolarization is:
- a) Action Potential, Influx of Sodium
 - b) Repolarization and Refractory
 - c) Recovery, Latency Time
 - d) Phosphate and Bicarbonate Ions are neutralize
 - e) Influx of potassium and reflux of sodium, potassium and proteins
137. The delicate layers which covers the spinal cord closely is:
- a) Pia Matter

- b) Dura Matter
- c) Arachnoid Space
- d) Central Canal
- e) Epidural Space

138. Two of these spinal plexuses don't exist:

- a) Lumbar Plexus
- b) Cervical Plexus
- c) Splenius Plexus
- d) Brachial Plexus
- e) Sacral Plexus

139. The space between the dura mater and the periosteum is called:

- a) Subarachnoid Space
- b) Epidural Space
- c) Arachnoid Space
- d) Synaptic Cleft
- e) Central Canal and grey commissure

140. Which of these lobes of the cerebrum plays a critical role in memory, equilibrium, and hearing:

- a) Frontal Lobe
- b) Parietal Lobe
- c) Occipital Lobe
- d) Insula
- e) Temporal Lobe

141. Which of these lobes play a critical role in vision:

- a) Parietal Lobe
- b) Cerebellum
- c) Occipital Lobe
- d) Thalamus
- e) Medulla Oblongata and Pons

142. What portion of the brain relays the message from the spinal cord to the cerebellum?

- a) Diencephalon
- b) Corpus Callosum
- c) Fornix
- d) Cerebellum
- e) Thymus Gland

143. All these cranial nerves are derived from the brainstem except:

- a) Optic nerve
- b) Vestibulocochlear nerve

- c) Hypoglossal nerve
- d) Glossopharyngeal nerve
- e) Facial nerve

144. The main structure which controls the breathing rate, heart rate, sneezing, and coughing is:

- a) Midbrain
- b) Oculomotor nerve
- c) Pineal gland or corpus cerebri
- d) Medulla oblongata
- e) Hypophysis
- f) Mammillary body
- g) Grey commissure
- h) Cerebral aqueduct

145. The space between the dura mater and the periosteum is called:

- a) Subarachnoid space
- b) Epidural space
- c) Arachnoid space
- d) Synaptic cleft
- e) Central Canal and grey commissure

146. Which statement is NOT correct:

- a) All endocrine gland have duct
- b) All endocrine gland are ductless
- c) All endocrine gland produce hormone
- d) All endocrine glands release their product in the blood stream
- e) Endocrine glands play a role in maintain homeostasis

147. The birth control pill contains progesterone and:

- a) Testosterone
- b) Aldosterone
- c) Estrogen
- d) DHT
- e) Insulin

148. The hormone, which lowers blood sugar, is:

- a) Glucagon
- b) Insulin
- c) Acetyl Choline
- d) Luteinizing Hormone
- e) Aldosterone

149. The hyperglycemia is caused by:

- a) Insuline
- b) Glucagon
- c) PTH
- d) Calcitonin
- e) Thymosine

150. The mineralcorticoid involved in sodium reabsorption and secretion of potassium by the kidney is:

- a) Aldosterone
- b) FSH
- c) LH
- d) Glucagon
- e) Norepinephrine

151. FSH in the male stimulates:

- a) Ovulation
- b) Sperm Production
- c) Follicular Growth
- d) Sex Drive
- e) Testosterone

152. What hormone induces ovulation:

- a) FSH
- b) TSH
- c) GNRH
- d) LH
- e) Relaxin

153. This hormone is not produced by the pituitary gland (hypophysis):

- a) FSH
- b) Oxytocin
- c) LH
- d) Melatonin
- e) Thyroid Stimulating Hormone

154. This hormone induces labor, uterine contraction, and milk letdown is:

- a) Oxytocin
- b) Progesterone
- c) Inhibin
- d) Triglyceride
- e) Melanocytes

