

PHYSIOLOGY: INTRODUCTION

BND-102

PROGRESS TEST 1

TEXT: *The Human Body Book* by Dorling Kindersley

This test will cover the introduction and pages 1-73 in the textbook. It may contain True or False, Multiple Choice, Fill in the Blanks, or Questions and Answers. At the end of your Progress Test, you will find the Answer Sheets on which to write your answers.

1. True or False: Osteoarthritis is often confused with rheumatoid arthritis, but the two disorders have different causes and progressions. Osteoarthritis may affect only a single joint and can be triggered by localized “wear and tear,” which results in painful inflammation from time to time.
2. True or False: Blood cells are transported by blood plasma, which is a liquid that accounts for about 55 percent of the blood volume. In addition, it is composed of about 90 percent water.
3. A “_____” joint is a peg-like projection from one bone that turns in the ring-shaped socket of another bone, or conversely, the ring turns around the bony projection.
A. Hinge B. Gliding C. Saddle D. Pivot
4. True or False: The circulatory system ensures that oxygen and nutrients are distributed throughout the body, as well as gathering waste products that are removed by the urinary and respiratory systems.
5. The “_____” nerve is the largest nerve in the body, and the pressure exerted on its roots may cause pain to radiate down the entire leg.
6. True or False: *Cells* are highly organized with many interior chambers and compartments linked by sheets and membranes that are held in place by a

flexible, lattice-like, ever-changing “skeleton” of tinier tubules and filaments.

7. A gene is generally regarded as a unit of DNA needed to construct one _____.
- A. Cell B. Chromosome C. Protein D. Nucleus
8. Mitochondria have their own DNA known as “_____.”
9. In a neuron, _____ receive messages from other neurons, or from nerve-like cells in sense organs, which conduct them toward the cell body of the neuron. _____ convey messages away from the cell body towards other neurons or to muscle or gland cells.
10. The most flexible cartilage is “_____” cartilage, which is due to its high proportion of elastin fibers and relatively little matrix.
11. The body’s two major control systems, “_____” and “_____,” are mainly responsible for coordinating homeostatic mechanisms that use feedback loops.
12. “_____” joints are the body’s most numerous, versatile and freely moving joints. There are around _____ synovial joints in the body.
13. True or False: There are twenty nine bones in the human head. Twenty-two bones form the skull itself, while twenty-one of these, excluding the lower jaw (mandible), fuse into a single firm structure.
14. A fracture that is caused by a direct impact shattering the bones into several fragments or pieces during an accident is called a “_____” fracture.
- A. Comminuted B. Greenstick C. Transverse D. Spiral
15. True or False: A *sinusoid*, also referred to as a hepatic macrophage, is a type of white blood cell specific to the liver, which engulfs and digests old worn-out blood cells and other debris.

16. True or False: Movements in the body, such as nodding and walking, employ the mechanical principles of applying force to one part of a rigid lever, which tilts at a pivot point (fulcrum) to move a weight (load) elsewhere on the lever.
17. True or False: There are less than twelve ligaments that bind the foot's tarsal bones to each other.
18. The process by which a gene is able to make its protein or other substance is known as "_____."
19. True or False: The average adult body contains about 55 pints of water.
20. The Human Genome Project, a multinational effort to map the sequence of the human genome, was completed in 2003. This research led to the identification of more than _____ individual human genes with 46 chromosomes that collectively include 3.2 billion base pairs.
- A. 10,000 B. 20,000 C. 30,000 D. 40,000
21. True or False: During vigorous exercise, two-thirds of the heart's output of blood goes to the muscles, in comparison to only one-fifth at rest, giving the heart muscle a workout.
22. Cordlike nerves are composed of bundles of communication strands known as "_____". Most nerves travel to a specific site within the body. In addition, they carry two types of fibers: first, sensory (afferent) fibers that convey impulses from receptors within the skin, sense organs and internal organs that return back to the brain and spinal cord; and second, motor (efferent) fibers that transmit signals from the brain and spinal cord directly to a muscle or a gland.
- A. Tascicles B. Fascicles C. Epineurium D. Disks
23. "_____", also known as *osteitis deformans*, can affect any bone in the skeleton, although it occurs most commonly in the pelvis, collarbone, vertebrae, skull and leg bones.
24. Muscles contain many tiny sensors known as "_____".

25. Bone cells include _____, which calcify bone as it forms; _____, which maintain healthy bone structure; and _____, which absorb bone tissue where it is degenerating or not needed.

NOTE:

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PROGRESS TEST 2

TEXT: *The Human Body Book* by Dorling Kindersley

This test will cover pages 74-127 in the textbook. It may contain True or False, Multiple Choice, Fill in the Blanks, or Questions and Answers. At the end of your Progress Test, you will find the Answer Sheets to write your answers.

1. True or False: Although the brain accounts for approximately 8% of the total weight of the body, it requires 20% of the body's blood. Both oxygen and glucose are transported by the blood. Without these essential elements, brain function would quickly deteriorate and dizziness, confusion and loss of consciousness may occur. Within four to eight minutes of depriving the brain of oxygen would result in brain damage and possibly death.
2. True or False: The branches of one spiral nerve may join with other nerves to form meshes called *plexuses* where information is shared.
3. "_____ " carry blood away from the heart toward organs and tissues. Their thick walls and muscular and elastic layers can withstand the high pressure that occurs when the heart contracts.
A. Tubeles B. Arteries C. Portals D. None of the above
4. The "_____ " system influences the subconscious and instinctive behavior, which is similar to an animal's responses that relate to its survival and reproduction. In humans, many innate and early-evolved "primitive" behaviors are modified by conscious and thoughtful considerations, which are based in the upper regions of the brain.
A. Brain B. Cerebral C. Sympathetic D. Limbic

5. A “ _____ ” (TIA), temporarily interrupts the blood supply to the brain, which result in symptoms that are similar to a stroke and may last two to thirty minutes, but usually no more than twenty-four hours. The most common cause is an embolus, which is a tiny blood clot or a lipid fragment that is found in other parts of the body. Up to one-third of TIA sufferers have a stroke within five years, if left untreated.
6. About the size of a sugar cube, the brain’s “ _____ ” contains numerous tiny clusters of neurons called *nuclei*. It is usually regarded as the vital integrating center of the limbic system.
- A. Hypocampus B. Hypothalamus
C. Infundibulum D. None of the above
7. “ _____ ” are the brain’s storehouse of information, whether these are learned items or emotionally significant events. In order to create _____, nerve cells are thought to form new protein molecules and interconnections. No one region of the brain stores all _____ because the storage site depends on the type of _____. How to type or ride a bike are _____ held in motor areas, while those about music are held in the auditory areas.
- A. Memories B. Synthetics C. Cells D. Visions
8. A stroke may be caused by an interruption of the brain’s _____ supply, or by the loss of _____ onto the brain’s surface, or deep within its tissue. Any disruption of the _____ supply to the brain starves some of the nerve cells of oxygen and nutrients. The affected cells are unable to communicate with the parts of the body they serve, which results in a temporary or permanent loss of function. Hemorrhaging impairs normal functioning of the brain by compressing and irritating the tissue.
9. True or False: Touch operates by means of sensory receptors in the skin or in deeper tissue. These receptors relay signals to the spinal cord or brain stem, and then travel to higher areas of the brain. Some receptors are enclosed within a capsule of connective tissue, while others are uncovered.
10. “ _____ ” can affect a small facial muscle to many of the major muscles of the body. Voluntary muscle activity, as well as automatic

functions such as breathing, may be affected, and there may be loss of sensation.

11. The heart has _____ valves that control blood flow. Each has a similar structure, although they differ in certain details.
- A. Three B. Four C. Five D. Six
12. _____ molecules dissolve within the nasal mucus and stimulate the hair-like endings called *cilia* on the receptor cells, therefore, generating a nerve impulse. A nerve impulse travels along the fibers of the cells while passing through the holes in the cribriform plate of the ethmoid bone and then into the olfactory bulb where they synapse with fibers of the olfactory nerves.
- A. Taste B. Smell C. Sensory D. Odor
13. “_____” is caused by a temporary inadequate supply of blood to the heart muscle that may be caused by arterial narrowing, which is due to atherosclerosis. The pain most often occurs when the heart’s workload is increased and fades with rest. Various causes that may trigger this condition may include stress, cold weather, or a large meal.
14. The most influential gland in the endocrine system is the “_____” or “_____” gland. It is actually two distinct glands in one. It is composed of the anterior lobe, also known as the “adenohypophysis”, and the posterior lobe, or “neurohypophysis.”
15. True or False: Epileptic seizures may be generalized or partial. It depends on how much of the brain is affected by the abnormal electrical activity.
16. True or False: The initial nerve pathways for involuntary responses run along the spinal nerves into the spinal cord, then travel up ascending nerve tracts to the lower autonomic regions of the brain, particularly the hypothalamus and parts of the limbic system.
17. An “_____” is a fragment of material that breaks away from its original site and can cause the partial or total blockage of a blood vessel.
- A. Embolism B. Thrombosis C. Aneurysm D. Arrhythmia

18. When beta cells in the pancreas are destroyed, the pancreas produces too little insulin or none. This is called “ _____ ” diabetes.
19. True or False: The spinal cord extends from the base of the brain and down to the lower (lumbosacral) part of the spinal column. It is shaped like a flattened cylinder and it is slightly wider than a pencil for most of its length, while it tapers to a threadlike tail at the base.
20. Another name for the muscular wall of the heart that is constantly active and needs a generous supply of oxygen and energy from the blood is called the “ _____ ”.
21. A false sensation of movement and a spinning sensation that is often associated with nausea and sometimes with severe vomiting is known as “ _____ ”.
- A. Motion Sickness B. Tinnitus C. Vertigo D. Deafness
22. True or False: An aneurysm is an abnormal swelling of a weakened arterial wall that makes the wall bulge out like a balloon.
23. A _____ is characterized by episodes of severe headache often associated with visual disturbances, nausea and vomiting.
24. Nerve tracts of the spinal cord include _____ tracts, which are bundles of nerve fibers that relay impulses in relation to bodily sensations and inner sensors, such as pain that moves upward through the spinal cord to the brain. The _____ tracts convey motor signals from the brain to the skeletal muscles of the torso and limbs in order to bring about voluntary movements.
25. “ _____ ” is a procedure used to widen a section of the coronary artery that has been narrowed or blocked by atheroma. Under local anesthetic, a fine catheter is inserted into the femoral artery located in the groin or arm area and then passed up the aorta and into the coronary artery network.
- A. Thrombolytics B. Angiography C. Angioplasty D. None of the above

26. Plasma is _____% water containing dissolved substances such as glucose (blood sugar), hormones, enzymes and waste products, such as urea and lactic acid. In addition, plasma contains proteins such as albumins, fibrinogen and globulins.
- A. 60 B. 70 C. 80 D. 90
27. Infection of the brain, or _____, can be a rare complication resulting from a viral infection, such as the mumps or measles. This condition can occasionally be fatal, and babies and elderly people are usually at risk.
28. The _____ is a pea-sized gland located near the center of the brain, which is directly behind the thalamus. It is closely involved in the body's sleep-wake cycle and diurnal (24-hour) rhythms, which is triggered by darkness.
29. The second region of the ear where sound waves are amplified and transferred from the air into the fluid of the inner ear is known as the "_____ " ear.
30. True or False: The reticular formation is a series of long, slim nerve tracts that are located in much of the length of the brain stem.

NOTE:

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ANSWER SHEETS

1. T F

2. T F

3. A B C D

4. A B C D

5. _____

6. A B C D

7. A B C D

8. _____, _____, _____

9. T F

10. _____

11. A B C D

12. A B C D

13. _____

14. _____ or _____

15. T F

16. T F

17. A B C D

18. _____

19. T F

20. _____

21. A B C D

22. T F

23. _____

24. _____, _____

25. A B C D

26. A B C D

27. _____

28. _____

29. _____

30. T F

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PLEASE HOLD YOUR PROGRESS TEST. DO NOT SEND BACK TO THE SCHOOL YET! YOU MUST WAIT UNTIL ALL OF YOUR PROGRESS TESTS ARE COMPLETED.

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PROGRESS TEST 3

TEXT: *The Human Body Book* by Dorling Kindersley

This test will cover pages 128-247 in the textbook. It may contain True or False, Multiple Choice, Fill in the Blanks, or Questions and Answers. At the end of your Progress Test, you will find the Answer Sheets to write your answers.

1. True or False: Acute bronchitis may be an infection in the upper respiratory tract such as tonsillitis. Usually, only the larger and medium-sized bronchi are affected as they become inflamed and narrowed.
2. There are numerous types of white blood cells that are derived from the bone marrow. The largest cells in the blood, with big and rounded, or indented nucleus that engulfs pathogens, are referred to as “_____”.
A. Monocytes B. Lymphocytes C. Neutrophils D. Basophils
3. “_____” are the smallest of all the microbes; millions would cover the head of a pin. Many _____ can remain inactive for long periods and survive freezing, boiling and chemical attacks, yet they can activate suddenly when they have the opportunity of invading a living cell.
4. The mouth, pharynx, esophagus, stomach, small intestine, large intestine, and anus make up the _____, which is a food-processing pipe about 30 feet (9 m) long. Digestive organs include three pairs of salivary glands, pancreas, liver and gallbladder with their associated ducts. These organs have an important function in digestion.
A. Internal body B. Upper stomach
C. Lower spleen D. Digestive tract

5. True or False: The colon converts the liquid chyme into semisolid feces for storage and disposal.
6. The _____ supplies blood to the kidneys, and it branches from the aorta, which is the main artery of the body.
- A. Renal Vein B. Renal Artery C. Renal Hilus D. Ureter
7. “_____” is one of the most common and most variable of all lung conditions. It affects as many as one in four children in some regions. The muscle in the walls of the airways contracts spasmodically, which cause the airways to be constricted that brings on an attack of breathlessness.
8. The duodenum, jejunum, and ileum together make up the _____. Short and curved, the duodenum receives secretions from the liver and pancreas. The jejunum and ileum are both long and coiled. The jejunum is slightly thicker, redder and shorter than the ileum. In the _____, food is broken down by pancreatic juice, bile and intestinal secretions, so that nutrients can be absorbed and utilized.
- A. Small intestine B. Large intestine
C. Large bowel D. None of the above
9. _____ epithelium is a type of columnar epithelium that appears to be arranged in vertical layers. However, it actually consists of a single layer of cells of varying shapes and heights.
10. The muscular movements in the walls of the colon mix and propel feces along the digestive tract toward the rectum. The movement of feces varies in rate, intensity and nature depending on the stage of digestive contents. The three types of motion are all but which motion?
- A. Peristaltic Contractions B. Mass Movements
C. Segmentations D. Reabsorption
11. True or False: An ovary contains hundreds of immature egg cells.
12. True or False: *Testosterone* causes the cartilage in the voice box to grow larger and thicker, which results in the vocal cords getting longer and

thicker, and in addition, it causes the cords to vibrate at a lower frequency so the voice becomes deeper.

13. True or False: The greasy white substance called *vernix* that covers the fetus's body stops the skin from wrinkling due to the exposure to amniotic fluid while in the uterus. It is washed or wiped off after birth.
14. "_____ " is caused by failure of the muscular ring (sphincter) at the lower end of the esophagus to relax upon swallowing. Other contributing factors are poor coordination of the contractions in the muscular wall of the esophagus that propels food along to the stomach.
15. The portion of the tooth above the gum is the crown; the part embedded in the jawbone is known as the "root" and the area where these two meet, at the gum or gingival surface, is called the "_____ " of the tooth.
A. Enamel B. Neck C. Cementum D. Pulp
16. True or False: Darker skin has smaller melanocytes with more melanosomes, which break down to give even pigmentation through skin cells. Lighter skin has larger melanocytes and grouped melanosomes.
17. True or False: The stomach breaks food into smaller particles by physically using muscular movement, but like in the mouth, it secretes digestive chemicals (enzymes). By the time the pulverized food and enzymes (chyme) reach the duodenum, many of the food particles are already microscopically small, yet not small enough to pass across the cell membranes into the body tissues.
18. True or False: The term *chorion* refers to the main protective sac around the fetus.
19. "_____ " are noncancerous tumors that occur within the wall of the uterus and are very common. They occur in about one-third of the women that are of childbearing age. They can occur singly, or in a group, and range from pea-size to as large as a grapefruit.
20. The _____ system regulates the volume and composition of fluids in the body while removing waste products and excess fluid. Waste products are filtered from the blood and through the kidneys. They are then excreted

through the urine, which descends through the ureters into the _____ bladder. Normally, urine is stored in the bladder until the muscles at the bladder outlet relax and allow the urine to be expelled through the urethra.

A. Urinary B. Blood C. Excretory D. Biliary

21. The essential sex glands in women are the two ovaries. At puberty, they begin to release female germ cells, known as *ova*. They synthesize the sex hormones, estrogen and progesterone that affect the development of female sexual characteristics, such as general body fat increases, hair and skin becoming oily, and finally, _____ occurs.

22. The _____ is the lower, narrow protruding, collar-like neck of the uterus. Its central opening allows sperm, menstrual blood, or a baby to pass through. In the process of childbirth, it will greatly dilate (widen).

A. Urethra B. Cervix C. Vagina D. Uterus

23. The _____ is the main route for air to enter and exit the lungs. It is lined with a sticky, mucus-covered membrane that traps dust particles and germs, and it is divided in two by a central plate of cartilage.

A. Epiglottis B. Nose hairs
C. Larynx D. Nasal cavity

24. The _____ is a special organ that supplies the fetus with nutrients and oxygen; absorbs fetal waste products; and acts as a barrier against harmful substances. It derives from the trophoblast which is the outer layer of the blastocyst (the mass of cells that implants in the uterine lining after fertilization). It begins to form as soon as implantation occurs, and it is well established by the tenth day. Hormones, from the _____, help maintain the endometrium so the pregnancy can continue.

25. True or False: Metabolism is the sum of all the chemical reactions taking place in the body, and the *Basal Metabolic Rate* (BMR) is the energy expended for basic body functions at rest, including the function of the heart, brain, lungs and other organs.

26. True or False: Of all the major systems, the reproductive system is the one that differs most between the sexes. In addition, it is the one that does not function until puberty.
27. At birth, the brain is a quarter of its adult size. It almost has its full complement of nerve cells, but they have not yet developed large numbers of interconnections. The baby's skull is partly cartilage, and there are gaps called "_____ " and seams (sutures) between its bones to allow for expansion.
28. An "STD" (sexually transmitted disease) that is characterized by inflammation caused by the bacterium known as "Neisseria Gonorrhoeae", often does not have symptoms, but can include a discharge from the penis or vagina, including painful urination.
- A. Gonorrhea B. Syphilis C. Chlamydia D. Prostatitis
29. An inflamed appendix causes acute pain that usually starts in the upper or mid-abdomen. It is common in children and adolescents. Mild fever, nausea, vomiting and perhaps loss of appetite and frequent urination are the common symptoms of _____.
30. During _____, cell division produces sex cells such as the egg and sperm that separate each pair of chromosomes which ends with four daughter cells that have half the normal number of chromosomes with only one member of a chromosome pair in each. At fertilization, when the egg and sperm unite, the chromosome number (23 pair) is restored.

NOTE:

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PROGRESS TEST 3

ANSWER SHEET

1. T F

2. A B C D

3. _____, _____

4. A B C D

5. T F

6. A B C D

7. _____

8. A B C D

9. _____

10. A B C D

11. T F

12. T F

13. T F

14. _____

15. A B C D

16. T F

17. T F

18. T F

19. _____

20. A B C D

21. _____

22. A B C D

23. A B C D

24. _____

25. T F

26. T F

27. _____

28. A B C D

29. _____

30. _____

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END OF ALL PROGRESS TESTS

PLEASE NOTE:

PLEASE PHOTOCOPY YOUR ORIGINALS AND SEND ALL OF YOUR ORIGINAL PROGRESS TESTS 1, 2, AND 3, BACK TO THE SCHOOL FOR GRADING. STUDENTS! DO NOT PROCEED TO YOUR FINAL EXAMINATION UNTIL YOUR INSTRUCTOR HAS GIVEN YOU PERMISSION TO PROCEED.

UNIVERSITY OF NATURAL HEALTH™

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FINAL EXAMINATION

TEXT: *The Human Body Book* by Dorling Kindersley

The Final Examination will be composed of True or False, Multiple Choice, Fill in the Blanks, Questions and Answers, and a Matching Section. The Answer Sheets on which to write your answers to the Final Examination can be found at the back of each Section of your Final Examination. If you do not have enough space for your answers, please type them onto separate paper, and attach these typed pages to your Answer Sheets. Please **photocopy** your **Test Answer Sheets only**, and send the originals back to the school for grading. Please allow four to six weeks for grading. You may now proceed with your Final Examination.

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FINAL EXAMINATION: SECTION 1

TRUE OR FALSE: Please circle the correct answers on your Answer Sheets ONLY, found on the last page of Section 1.

1. The heart is a muscular pump that contracts and sends blood into tough, elastic tubes called *arteries*, which branch into smaller vessels and convey oxygen-rich blood through the body.
2. Dialysis involves filtering the blood of a person with kidney failure. There are two types of dialysis: hemodialysis, which filters the blood externally, and peritoneal dialysis, in which the peritoneal membrane in the abdomen is used as a filter.
3. The *Autonomic Nervous System* (ANS) has the key task of maintaining constant conditions within the body, known as "Homeostasis". Most of the activity in the "ANS" is independent (autonomic) of the conscious mind, so we are rarely aware of its workings.
4. The average skeleton has 260 bones.
5. In nerve regeneration, peripheral nerve fibers that have been crushed or partially cut may slowly regenerate, if the cell body remains undamaged. The damaged section of fiber loses its nourishment and degenerates while leaving the myelin sheath hollow.
6. *Lymph nodes* produce and harbor immune cells that protect the body from disease, and they are scattered throughout the body and are concentrated in groups.
7. *Kyphosis* is an exaggerated lumbar curvature that produces a hollow in the small of the back; an increased thoracic curvature that causes a rounded, or humped, upper back is called *lordosis*.

8. *Chronic Obstructive Pulmonary Disease (COPD)* consists primarily of chronic bronchitis and emphysema. These two conditions usually occur together in the same person. It is a long-term disorder in which there is progressive damage to the lung tissue with increased shortness of breath.
9. The frontal lobe is where recognition, of specific tones and loudness, takes place. This area also plays a role in memory storage.
10. *Bile* assists the breakdown of fats (lipids) in the small intestine. The liver secretes up to 1 liter of bile daily. It passes along the left and right hepatic ducts from the liver's two lobes and then along the common hepatic and cystic duct to the gallbladder, where it is concentrated and awaits release for after a meal.
11. Minor bumps to the head or injury to the scalp alone are not usually serious and have no long-term consequences. However, any injury that affects the brain itself is potentially serious.
12. In systemic circulation, the right side of the heart pumps blood to the lungs to be oxygenated and then back to the left side of the heart. In pulmonary circulation, the left side of the heart pumps oxygen-rich blood to all the body tissue, while the oxygen and depleted blood is returned to the right side of the heart.
13. Muscles can only pull, and not push; they are arranged in pairs that act in opposition to each other.
14. Hormones regulate processes such as the breakdown of chemical substances in metabolism, fluid balance and urine production, the body's growth and development, as well as sexual reproduction.
15. A skin patch approximately the size of a fingernail contains about 1,000 receptors of various kinds, however, the skin on the fingertips has more than 5,000 receptors that detect light touch for a precise feeling.
16. Without control, the heart would beat at its natural, intrinsic rate of about 100 times per minute. However, a region known as the *cardioregulatory center* in the medulla of the brainstem sends electrical impulses along the nerves to set an average resting rate of about 70 beats per minute.
17. *Viruses* cannot exist independently except as inactive chemical structures, whereas bacteria have cellular machinery for obtaining energy, processing

nutrients and reproducing themselves. These latter activities make bacteria vulnerable to chemical interference, which is a feature exploited by antibiotics.

18. *Emphysema* is usually reversible.
19. A *vein* is more flexible than an artery and its walls are considerably thinner. The blood inside a vein is under relatively low pressure and, as a result, it flows slowly and smoothly.
20. The *pancreas* is a dual-purpose gland that produces digestive enzymes in cells called *acini*. In addition, it has an endocrine function that involves controlling glucose (blood sugar), which is the body's main energy source.
21. Balance is not a single sense, but a process involving a range of sensory inputs, brain analysis and motor outputs.
22. The body has three main types of muscle tissue: skeletal muscles, also referred to as *voluntary muscles* whose action we control at will; smooth muscles, also known as *involuntary muscles* because they work automatically; and *cardiac muscles* that reside within the walls of the heart.
23. In *Parkinson's Disease*, the level of dopamine relative to acetylcholine is increased, which adversely affects muscle control.
24. The *skin* is one of the largest organs in the body. It weighs 6-9 lbs and has a surface area of almost 21 sq ft.
25. *Liver* function is mostly concerned with metabolism. It includes the breakdown of digestive products; the storage of the resulting products; the circulation of substances such as vitamins and minerals; and the construction of complex molecules such as enzymes.
26. The onset of "AIDS" is signaled by the development of disorders called "AIDS-defining illnesses." Some are opportunistic infections that are caused by organisms that are harmless to healthy people, but dangerous to those with reduced immunity.
27. *Sneezing* to clear the nasal airways and *coughing* to remove irritants from the lower airways are examples of the body's reflexes in response to a stimulus.

28. The lungs' microscopic air sacs and alveoli are elastic, thin-walled structures arranged in clumps at the end of the respiratory bronchioles.
29. *Inflammatory Bowel Disease* is a combination of intermittent abdominal pain, constipation and diarrhea that affects as many as one in five people during their lifetime.
30. The *gynecoid pelvis* is shallow, and it allows the uterus to expand as the fetus grows. The round shape of the wider pelvic inlet provides more room for the head of a fetus to pass through during delivery.
31. The *thalamus*, which is shaped like two eggs that are side by side, sits at the bottom of the brain stem.
32. The *cervix* is a firm band of muscle and connective tissue that forms the lower end of the uterus. During late pregnancy, the cervix softens in an early phase of childbirth. *Braxton-Hicks Uterine Contractions* are painless and gently help thin the cervix so that it merges with the uterus's lower segment.
33. *Single-celled organisms* that have their genetic material inside a nucleus, unlike bacteria (opposite), are known by the general name of "protists." These animal-like organisms, which can move around and obtain energy by taking in food, are sometimes called *protozoa*.
34. A pregnancy lasts for approximately 40 weeks from the first day of a woman's last menstrual period (usually 38 weeks from fertilization). It is divided into thirds, or trimesters, each lasting about three calendar months.
35. Age affects all body organs, including the heart, lungs, kidney, liver, and brain. Most have a "reserve" (an ability to function beyond their usual needs) and with age is lost.
36. *Saliva* is produced by three pairs of salivary glands: the *parotids* are in front of and just below each ear; the *submandibulars* are on the inner sides of the lower jawbone (mandible); and the *sublinguals* are in the floor of the mouth just below the tongue.
37. Located within the temporal lobe on each side of the brain, the *amygdala* stores emotional parts of memory, especially power feelings.
38. *Mosaicism* is a recessive disorder found on chromosome number seven.

39. At birth, as the baby begins to breathe, the umbilical cord is clamped. This forces the circulatory system into a monumental response to convert itself immediately to obtain its oxygen supply through the lungs.
40. *Anaphylaxis* is a massive immune system response that involves the whole body. Widespread release of huge amounts of histamine causes a sudden fall in blood pressure (shock) and the narrowing of the airways. It can be fatal unless treated immediately.

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FINAL EXAMINATION: SECTION 1

ANSWER SHEET

- | | | | | | | | | |
|-----|---|---|-----|---|---|-----|---|---|
| 1. | T | F | 14. | T | F | 27. | T | F |
| 2. | T | F | 15. | T | F | 28. | T | F |
| 3. | T | F | 16. | T | F | 29. | T | F |
| 4. | T | F | 17. | T | F | 30. | T | F |
| 5. | T | F | 18. | T | F | 31. | T | F |
| 6. | T | F | 19. | T | F | 32. | T | F |
| 7. | T | F | 20. | T | F | 33. | T | F |
| 8. | T | F | 21. | T | F | 34. | T | F |
| 9. | T | F | 22. | T | F | 35. | T | F |
| 10. | T | F | 23. | T | F | 36. | T | F |
| 11. | T | F | 24. | T | F | 37. | T | F |
| 12. | T | F | 25. | T | F | 38. | T | F |
| 13. | T | F | 26. | T | F | 39. | T | F |
| | | | | | | 40. | T | F |

PHYSIOLOGY: INTRODUCTION

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FINAL EXAMINATION: SECTION 2

MULTIPLE CHOICE: Please circle the correct answers on your Answer Sheets **ONLY**, found on the last page of Section 2.

1. _____ make up about two-fifths of the body's weight. Their job is to contract and pull the bones to which they are anchored. Rarely working alone, they usually contract in groups by moving bones at accurate angles with precise distances.
A. Muscles B. Organs C. Bones D. Skins
2. The _____ is a strong but flexible support that holds the head and body upright, while it allows the upper body to bend and twist. Thirty-three ringlike bones called "vertebrae" are linked by a series of mobile joints. Sandwiched between the vertebrae are springy disks of tough cartilage that compress when under pressure which respond as shock absorbers in the body. These disks are subjected to enormous forces; sometimes as great as several hundred pounds per square inch during strenuous movements. Strong ligaments and muscles that surround the _____ stabilize the vertebrae while helping to control movement.
A. Tendons B. Muscles C. Skeleton D. Spine
3. Bone is an active tissue, and even though it is about _____ percent water, it has an extremely strong, yet lightweight and flexible structure.
A. 15 B. 22 C. 33 D. 62
4. The "_____" is the widest part of the digestive tube. It is a muscular-walled, J-shaped sac in which food is stored, churned and mixed with gastric juices that are secreted by its lining.
A. Stomach B. Throat C. Esophagus D. Ileum

5. “_____” is a collection of specialized cells suspended in a straw-colored liquid called *plasma*.
- A. Lymph B. Fluid C. Water D. Blood
6. “_____” is the breaking apart of more complex molecules into simpler ones. This happens as part of energy production, for example, when glucose or fats are split apart to release energy.
- A. Catabolism B. Metabolism C. Synthesis D. Digestion
7. Skeletal (striated or voluntary) muscle consists of densely packed groups of hugely elongated cells known as “_____.” These are grouped into bundles (fascicles) and are composed of narrower structures.
- A. Myofibers B. Capillaries C. Veins D. Tendons
8. *Epithelial tissue*, also called “_____,” is an important structural element that acts as a lining or covering for other body tissue. “_____” can be classified according to cell type and according to the arrangement of cells into one or more layers. These tissue are specialized for protection, absorption, or secretion.
- A. Eye lids B. Corpuscles C. Epithelium D. Sensors
9. “_____” are strong but flexible cords made of dense connective tissue that links the skeletal muscle to a bone or other muscles.
- A. Tendons B. Muscles C. Tissue D. Ligaments
10. Supporting nerve cells, called “_____” protect and nourish the neurons. Several types exist for the purpose to destroy microorganisms, foreign particles, and cell debris from disintegrating neurons.
- A. Glial Cells B. Cords C. Nodes D. Mitochondria
11. “_____” (deoxyribonucleic acid), also referred to as the molecule of life, is found in almost all living things. It acts as a chemical code that contains instructions within the genes for the growth, development, function and maintenance of the various parts of the body.
- A. RNA B. Mitosis C. DNA D. Nucleus

12. The _____ is not simply a thin, waterproof covering for the human body, but it is a complex organ consisting of a number of specialized cells. Its thickness varies from about 1/50 of an inch on delicate areas such as the eyelids, to 1/5 of an inch or more on areas of wear and tear, such as the soles of the feet.
- A. Inner dermis B. Skin C. Epidermis D. Hide
13. All _____ pairs of ribs attach to the spine; the upper seven pairs, known as *true ribs*, link directly to the sternum by costal cartilage; the next two or three pairs of *false ribs* connect indirectly to the sternum by means of cartilage to the ribs above; the remaining *floating ribs* have no link to the sternum.
- A. 10 B. 12 C. 16 D. 18
14. “_____” is an autoimmune disorder marked by severe muscle weakness and fatigue. This is caused by the antibodies that gradually reduce the number of receptors within the fibers that stimulate muscle contractions. A *thymus* disorder may trigger the disease. Part of the treatment may involve the removal of the gland.
- A. Little Gravis B. Myasthenia Gravis
C. Myotitis Gravis D. Pectitis Gravis
15. In the spine, eight pairs of cervical spine nerves form two networks: the cervical and the brachial plexuses, which connect to the chest, head, neck, shoulders, arms and hands, and then to the diaphragm. This region is called the “_____” region.
- A. Sacral B. Thoracic C. Lumbar D. Cervical
16. Capillaries are the smallest and most numerous of the blood vessels that convey blood between the arteries and veins. At any moment, only _____ percent of the body’s blood is traveling within the capillaries; twenty percent in the arteries; and seventy-five percent in the veins.
- A. 15 B. 20 C. 5 D. 10

17. “_____” hearing loss results from the impaired transmission of sound waves to the inner ear, and it is often temporary. In children, the most common cause is *Serous Otitis Media*; in adults, blockage from earwax build-up is a common cause.
- A. Artificial B. Conductive C. Sensorineural D. Permanent
18. The _____ arteries are the only arterial blood vessels that transport deoxygenated blood to the lungs from the right side of the heart.
- A. Digital B. Facial C. Maxillary D. Pulmonary
19. The process that leads to *atherosclerosis* begins with abnormally high levels of excess fats and cholesterol in the blood. These substances infiltrate the lining of the arteries at sites of microscopic damage, which form deposits called “_____.”
- A. Atheroma B. Angina C. Fats D. Cholesterol
20. An infection occurs when microscopic organisms gain entry into the body and survive, multiply, and disrupt normal cell function. The infection may be localized, such as in a patch of skin or in a wound. It may be a _____ infection when the invading organisms are carried throughout the body by the blood and lymph.
- A. Synaptic B. Surface C. Systemic D. Complex
21. The _____ stores and releases glucose for energy; it sorts and processes vitamins and minerals; it breaks down toxins into less harmful substances, and produces bile.
- A. Liver B. Pancreas C. Stomach D. Intestine
22. The _____ secretes a juice in response to the food in the upper digestive tract. This juice is rich in enzymes that break down proteins, lipids, and carbohydrates. This fluid flows into the main and accessory pancreatic ducts, which empty the juices into the duodenum.
- A. Liver B. Gallbladder C. Pancreas D. Appendix
23. The _____ are paired, reddish-brown organs that are located at the back of the abdominal cavity and on either side of the spinal column. Their main function is to regulate the amount of water in the body, as well as to

keep the body fluids at a constant concentration and acid-base level. The _____ achieves this function by filtering blood, and by excreting waste products and excess water as urine.

A. Prostate B. Kidneys C. Pancreas D. Testes

24. The _____ are located within the abdomen. From puberty, they mature and release the female sex cells (gametes), known as *egg cells* or *ova*, which occurs roughly once a month as part of the menstrual cycle.

A. Ovaries B. Testes C. Fallopian tube D. None of the above

25. During its first _____ weeks of development, the unborn child is called an *embryo*. For the rest of the pregnancy, it is known as a *fetus*. The embryo develops from a cluster of cells formed by repeated divisions of the fertilized egg. Some of these cells form membranes to protect both the embryo and its placenta. The placenta nourishes the embryo and removes its waste products.

A. 8 B. 6 C. 4 D. 10

26. The “_____” is a region or zone of skin supplied by the dorsal (rear, sensory) nerve roots of one pair of spinal nerves. The nerve branches carry sensory information in relation to touch, pressure, heat, cold, and pain from the skin microsensors within the zone to the spinal cord.

A. Dermatome B. Nerve Root C. Reflex D. Ganglion

27. The _____ is the last main site for breakdown and uptake of nutrients, including minerals, salts and some vitamins. A considerable amount of water, mainly from digestive juices, is also absorbed.

A. Stomach B. Colon C. Pancreas D. Liver

28. The specific characteristic of a person is passed on in our “_____.” All “_____” carry a blueprint to make a particular product. “_____” can combine to produce a more complex trait, such as athletic ability.

A. Genes B. DNA C. RNA D. Meiosis

29. The _____ is the largest part of the brain, which has a heavily folded surface, the pattern of which is unique in each person.

A. Brain B. Cerebellum C. Cerebrum D. Medulla

30. It takes just one cell to undergo cancerous changes for a tumor to form. This unchecked cell divides into two more cancerous cells and continues to double with each division. A solid tumor is detectable after 25-30 doubling when it contains about one _____ cells.

- A. Billion B. Thousand C. Trillion D. Million

PHYSIOLOGY: INTRODUCTION

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FINAL EXAMINATION: SECTION 2

ANSWER SHEET

- | | | | | | | | | | |
|-----|---|---|---|---|-----|---|---|---|---|
| 1. | A | B | C | D | 16. | A | B | C | D |
| 2. | A | B | C | D | 17. | A | B | C | D |
| 3. | A | B | C | D | 18. | A | B | C | D |
| 4. | A | B | C | D | 19. | A | B | C | D |
| 5. | A | B | C | D | 20. | A | B | C | D |
| 6. | A | B | C | D | 21. | A | B | C | D |
| 7. | A | B | C | D | 22. | A | B | C | D |
| 8. | A | B | C | D | 23. | A | B | C | D |
| 9. | A | B | C | D | 24. | A | B | C | D |
| 10. | A | B | C | D | 25. | A | B | C | D |
| 11. | A | B | C | D | 26. | A | B | C | D |
| 12. | A | B | C | D | 27. | A | B | C | D |
| 13. | A | B | C | D | 28. | A | B | C | D |
| 14. | A | B | C | D | 29. | A | B | C | D |
| 15. | A | B | C | D | 30. | A | B | C | D |

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FINAL EXAMINATION: SECTION 3

FILL IN THE BLANKS: Please fill in the blanks on your Answer Sheets **ONLY**, found on the last page of Section 3.

1. Hormones are chemical messengers secreted by the _____ glands. These glands have no ducts as they secrete their hormones directly into the blood and are carried to every cell in the body. Hormones affect certain target tissues and organs while they regulate their activities.
2. The _____ system is the body's biological centerpiece. Unlike other systems, it functions for only part of the human lifespan. It is the only system that can be surgically removed without threatening a person's life.
3. More than _____ types of specialized cells comprise the human body. They develop as specific types of body tissue. In some cases, tissues are produced from several types of cells.
4. Most bones develop from structures made of _____ in the womb and throughout infancy.
5. Some facial muscles are anchored to your bones. Others are joined to tendons or to dense, sheet-like clusters of fibrous connective tissue call "_____."
6. The place where two bones meet is known as a "_____ of articulation." "_____" are classified either by their structure or by the way they move. In the freely movable synovial _____, the surfaces in contact slide over each other with almost no friction. The less mobile _____, such as those in the skull, are more firmly linked by fibrous tissue or cartilage to permit growth or to provide stability.
7. Ears act as energy converters that change the pressure differences in the air to electrochemical nerve impulses known as "_____."

8. Chemically, there are two main types of hormones. There are those that consist of protein and amine molecules, while others are composed of _____ molecules.
9. A set of four fibrous, cuff-like rings known as the “_____” is built into the upper heart. The rings provide rigid points of attachment for the four heart valves and for the various sections of the heart muscle.
10. Taste works in a similar way to smell. Its _____ cell (taste) receptors detect specific chemicals dissolved in saliva by a “lock-and-key” method. Groups of receptor cells are known as *taste buds*.
11. A noncancerous tumor called “_____” grows around and presses on the auditory nerve. It causes the progressive loss of hearing and is detected with an “MRI” scan.
12. In _____, the thyroid hormones, tri-iodothyronine and thyroxine, are underproduced, which leads to a slowing down of body functions. Symptoms include fatigue, weight gain, slow bowel activity and constipation, swollen face, puffy eyes, thickened skin, thinned hair, hoarse voice, and the inability to cope with cold conditions.
13. “_____” is the partial or total blockage of an artery, vein, or even the heart. It can occur when a blood clot forms due to circulatory problems. Deep vein _____ occurs in the deep veins of the legs and lower body, which rely to some extent on contracting the muscles and to assist blood flow.
14. The “_____” is sited between the pharynx and the trachea. It has a framework of nine cartilages: the paired arytenoids, cuneiforms, corniculates, and the unpaired epiglottic, thyroid and cricoids.
15. A _____ tumor is a growth or lump that damages surrounding tissues and organs. It may spread to other parts of the body. A _____ tumor is usually self-contained and does not spread to surrounding tissue in the body, and if they do not cause problems, they may be left untreated.
16. “_____” is the body’s first line of defense against potential harm. It is well equipped to prevent physical damage due to its supple, cushioned qualities. The epidermal cells on the outermost layers are tightly knit together, while allowing a certain amount of pliability. These cells are

almost entirely full of the tough protein keratin, which resists the various kinds of chemical attacks on the _____.

17. The “_____ system” is composed of a pair of kidneys, a pair of ureters, a bladder, and a urethra. These components together carry out the _____ system’s function of regulating the volume and composition of body fluids, while it removes the waste products from the blood, including the excess water in the body.
18. *Endometriosis* causes small pieces of the _____ lining to become attached to other nearby organs, such as the ovaries or large intestine. These pieces of tissue respond to hormonal changes and bleed during menstruation, but cannot leave the body through the vagina. This can cause pain and form scars on nearby tissue.
19. During the last weeks of pregnancy, the baby’s presenting part (the part that will emerge first, usually the head) descends into the bowl-like cavity of the pelvis. This process is known as “_____.”
20. Food enters the _____ and mixes with the saliva, and is moved about by the tongue. In approximately one minute, the food becomes a soft, moist mass called a “_____,” which is swallowed through the _____ and passes into the _____.
21. All living creatures have a natural _____. For humans, this is around 75-85 years of age. Although some people live much longer, the brain, muscles, joints, eyes, and other organs all decline with age. These changes are usually small until after the age of 60.
22. The microorganisms known as “_____” are present almost everywhere in the soil, water, air, food, drink and on the skin surface and within our internal body. Many kinds are harmless, such as those naturally present in the human intestines.
23. “_____” work by altering the chemistry of their target cells. “_____” do not initiate a cell’s biochemical reactions, but adjusts the rate at which they occur. Different _____ are released according to different trigger mechanisms.
24. “_____” is the term used for a moderate amount of soft-tissue damage to muscle fibers, which is usually caused by sudden, strenuous movements. Limited bleeding may occur inside the

muscle causing tenderness and swelling, which may be accompanied by painful spasms or contractions.

25. Often referred to as the hip bone, the “_____” is a bowl-like structure consisting of the left and right innominate bones or ossa coxae.
26. “_____” is one of the most commonly used methods of pain relief during labor and delivery. It is delivered through a needle into the space between the vertebra and the spinal column in the lower (lumbar) region of the back.
27. In the male reproductive system, each testes is a mass of more than 800 tightly looped and folded vessels known as “_____” tubules. Sperm begin as blob-like cells called *Spermatogonia*, that line the inner walls of each tubule.
28. *Leukemia* is cancer of the _____. These cancerous cells multiply in the bone marrow, where blood cells are normally made. This process reduces the production of healthy red and white blood cells, including platelets, to abnormally low levels.
29. Constantly alive with electricity, the “_____ system” is the body’s prime communication and coordination network. It is so vast and complex that all individual nerves from one body, joined end to end, could reach around the world two and a half times.
30. There are three major food components that yield different breakdown products: carbohydrates (starches and sugars) can be reduced to the simple sugar glucose; proteins are cut into _____ chains, peptides, and finally, single amino acids; and fats are reduced to fatty acids and glycerol.

PHYSIOLOGY: INTRODUCTION

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FINAL EXAMINATION: SECTION 3

ANSWER SHEETS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

7. _____
8. _____
9. _____
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15. _____, _____
16. _____

- 17. _____
- 18. _____
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- 25. _____
- 26. _____
- 27. _____
- 28. _____
- 29. _____
- 30. _____

PHYSIOLOGY: INTRODUCTION

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FINAL EXAMINATION: SECTION 4

QUESTIONS & ANSWERS: Please answer all questions in complete sentence format. **TYPE** your prose answers on **SEPARATE** paper and **TITLE** all pages “**FINAL EXAMINATION: SECTION 4.**” Please match your answer and question numbers in sequential order and then attach them to Section 4 before you send in your Final Examination.

1. Describe the difference between nonspecific response and specific response in the immune system.

2. What are the four stages of the heartbeat sequence?

3. What are two common causes of blindness? Define each cause and its treatment.

4. (A) Hormones function for what purpose?
(B) Name at least ten glands or organs that produce hormones.
(C) What are the specific purposes of these ten?

5. (A) What are the four causes of female infertility? Explain each.
(B) What are the three causes of male infertility? Explain each.

6. Explain the life cycle of the Influenza virus.

7.
 - (A) Explain the brain's process of forming memories.
 - (B) Explain how memory is classified as either "long-term" or "short-term" using the "durational" system.
 - (C) What are the areas of the brain that are involved in memory storage, and what are their individual roles?
 - (D) Name the primary sensory areas of the brain, and give a description of what each one controls.

8.
 - (A) How does the body make urine? Explain the process in detail.
 - (B) Name two common urinary tract disorders.

9.
 - (A) How does the placenta work?
 - (B) The placenta consists of many layers and pieces. Name the parts and give a description of each.
 - (C) In what month of pregnancy is the placenta almost fully developed?
 - (D) What are the two main problems that can affect the placenta?

10.
 - (A) What is cellular respiration?
 - (B) Explain the process of gas exchange within the lungs, once it is drawn into the body.
 - (C) How does breathing alter volume and pressure?

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FINAL EXAMINATION SECTION 5

1. "CT Scanning" _____ A *cystlike* abnormal sac filled with mucus that arises from a mucous membrane.

2. "PET Scanning" _____ DNA viruses that are present in some people who have been diagnosed with cold sores, genital herpes, chickenpox, shingles, and glandular fever.

3. "MRI" _____ Is an excitatory system that prepares the body for "fight of "flight" action.

4. An ultrasound scan of a fetus _____ Secretes hormones that control many other glands in the body and regulated by the hypothalamus.

5. "Mucocele" _____ The stage in the formation of the sperm and eggs when chromosomal material is randomly distributed.

- | | | |
|-------------------------------------|-------|---|
| 6. Nerve, sperm, and muscle | _____ | Nerve tissue formed mainly of the projecting fibers, or axons, of neurons (nerve cells). |
| 7. "DNA" | _____ | Defined as "any material, such as blood clots or tumor cells, which are carried in the bloodstream". |
| 8. "Sympathetic Nervous System" | _____ | Denotes "the narrowing of the air tubes so breathing becomes difficult". |
| 9. "Parasympathetic Nervous System" | _____ | An inflammatory disease that affects the gastrointestinal tract. |
| 10. "Vein" | _____ | Are all types of cells. |
| 11. "Retina" | _____ | Involves scanning chemical tracers introduced into the body that emit radioactive particles called "positrons". |
| 12. The "Pituitary Gland" | _____ | Is a morphine-like substance produced by |

the body in times of pain, stress, and happiness.

13. “Systolic” and “Diastolic”

_____ A light-sensitive layer lining the inside of the back of the eye that converts optical images to nerve impulses, which travel into the brain via the optic nerve.

14. “Adenoviruses”

_____ A drug that blocks the action of epinephrine, thus resulting in the body slowing the pulse and reducing blood pressure.

15. “Retroviruses”

_____ RNA viruses that can convert DNA into RNA and are found in patients with AIDS and some types of Leukemia.

16. “Herpes viruses”

_____ A soluble protein that attaches to body invaders, such as bacteria, and helps to destroy them.

17. The “Pancreas”

_____ Clusters of lymphoid tissue on each side of the back of the upper part of the throat.

18. "Meiosis" _____ A less harmful method of examining a fetus without using radiation.
19. "White Matter" _____ An insoluble protein that is converted from the blood protein fibrinogen to form a fibrous network, which is a stage in the creation of a blood clot.
20. An "Antibody" _____ Uses an X-ray scanner that rotates around the patient, and a computer that records the varying proportions of X-rays which are absorbed by tissues of different densities.
21. "Autonomic Nervous System" _____ Is the acronym for "deoxyribonucleic acid".
22. The "Beta-Blocker" _____ Controls unconscious functions, such as heartbeat.
23. "Bronchitis" _____ Is the presence of diverticula or small sacs that are created by protrusion of the intestine's inner lining through the wall.

24. "Bradycardia" _____ Secretes digestive enzymes.
25. "Asthma" _____ Thin-walled blood vessel that returns blood at low pressure to the heart.
26. "Fibrin" _____ Refers to a "slow heart-rate" condition.
27. An "Embolus" _____ Refers to blood pressure readings.
- _____ Acronym for "Magnetic Resonance Imaging".
28. An "Endorphin" _____ Inflammation of the tubes resulting in a cough that produces large amounts of sputum (phlegm).
29. "Crohn's" _____ Refers to a system or division that maintains balance and /or restores energy; for example, by slowing heart rate.
30. "Diverticular" Disease

