



**SIR ARTHUR LEWIS COMMUNITY COLLEGE
ACADEMIC YEAR (2024/2025) – SEMESTER TWO
END OF SEMESTER EXAMINATION**

COURSE CODE : BIO202
COURSE TITLE : Anatomy and Physiology II - Theory
LECTURER(S) : Ryan Gillette
DATE : 24 April 2025
TIME : 1:00 pm – 3:00 pm
DURATION : 2 hours
STUDENT ID # : _____

GENERAL INFORMATION AND INSTRUCTIONS

- Students must sign **IN** and **OUT** on the examination class list.
- Write your ID number on the question paper.
- This paper has 80 multiple choice questions.
- Circle the correct answer on the question paper.

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Instruction: Answer all questions by circling the most appropriate answer on the question paper.

1. Which structure regulates the flow of material into the colon?
 - a) Sigmoid colon
 - b) Pyloric sphincter
 - c) Ileocecal sphincter
 - d) Appendix
2. Which of the following hormones opposes the action of parathyroid hormone?
 - a) Calcitonin
 - b) Calcitriol
 - c) Insulin
 - d) Thyroid-stimulating hormone
3. A patient is on a diuretic (water pill) to help combat hypertension. The medication is not potassium-sparing. What side effects might the patient suffer?
 - a) Interference with ATP production
 - b) Weak bones
 - c) Low levels of hydrochloric acid in the stomach
 - d) Interference with action potential generation
4. Which is NOT a major function of the kidney?
 - a) Regulation of blood volume
 - b) Regulation of blood pH
 - c) Regulation of blood ionic composition
 - d) Regulation of blood cell size
5. A child riding a bike falls and hits their head. The child was not wearing a helmet. In the emergency room, cerebrospinal fluid taken during a spinal tap reveals blood. The doctors diagnosed the child had torn cerebral veins as they pass to the superior sagittal sinus. What area of the body was the cerebrospinal fluid taken?
 - a) Subdural space
 - b) Epidural space
 - c) Superior sagittal sinus
 - d) Subarachnoid space
6. Many medications introduced into the bloodstream cannot directly affect the neurons of the Central Nervous System (CNS) due to which of the following?
 - a) Oligodendrocytes form a continuous myelin sheath around the axons.
 - b) The astrocytes isolate the CNS by forming a blood-brain barrier.
 - c) Ependymal cells restrict the flow of interstitial fluid between the capillaries and the neurons.
 - d) Schwann cells form a capsule around neurons.
7. While on the medical ward, Nurse M noticed a patient with Jaundice, yellowing of the skin, which is a condition caused by the deposition of bilirubin in the skin. It may be associated with all of the following EXCEPT?
 - a) Cancer of the bowel or pancreas.
 - b) Increased atmospheric oxygen.
 - c) Excessive breakdown of red blood cells.
 - d) Blockage of bile drainage by gallstones.
8. Absence of angiotensin converting enzyme will lead to which of the following?
 - a) Will not have any effect on blood pressure.
 - b) Increased blood pressure.
 - c) Increase calcium absorption
 - d) Decreased blood pressure.

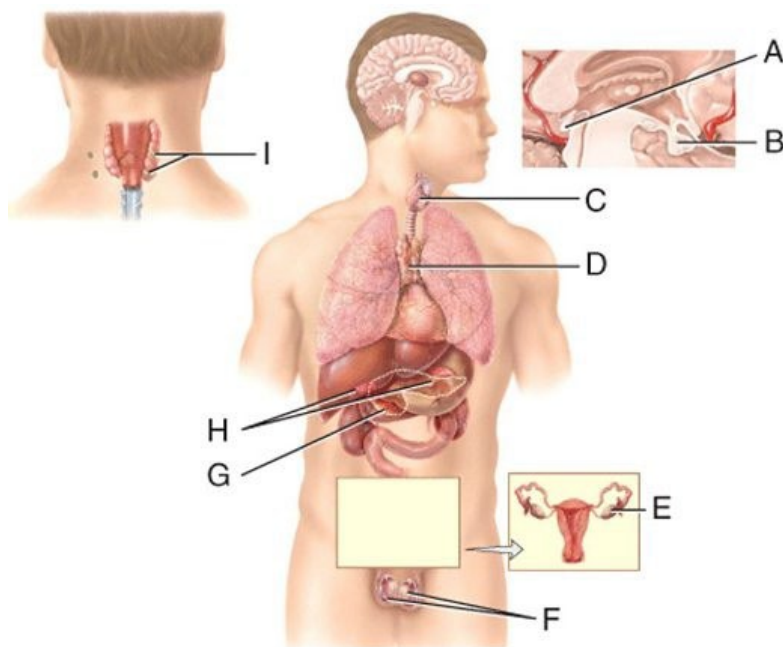
9. Some kidney diseases cause a change in the permeability of glomerular capillaries making them more permeable to plasma proteins. This changes the colloid osmotic pressure, thus drawing water out of the blood and into tissues. The result of that will be which of the following?
- Dehydration.
 - High blood pressure.
 - There is no actual change.
 - Edema.
10. Which of the following occurs when water loss is greater than water gain?
- Insensible loss
 - Evaporation
 - Dehydration
 - Precipitation
11. After 15 years working in the geriatric hospital of Bexon, an experience nurse will tell you that elderly people are more prone to which of the following?
- Constipation.
 - Duodenal ulcers.
 - All of these
 - Periodontal disease.
12. What structure attaches the ovaries and the uterus to the pelvic wall?
- Tendon
 - Broad ligament
 - Suspensory ligament
 - Bladder
13. Lymphatic capillaries, because of their greater permeability than blood capillaries, can readily absorb which molecules that are NOT easily absorbed by blood capillaries?
- Blood
 - Lipids
 - Carbohydrates
 - Interstitial fluid
14. An individual eats a diet high in digestible carbohydrates and fats and low in fiber. He begins to experience abdominal pain, constipation, nausea, vomiting and a low-grade fever. He is most likely suffering from which of the following?
- Appendicitis.
 - Diverticulitis.
 - Gastric ulcer.
 - Viral gastroenteritis.
15. If an individual complains of bloating, gas, cramps, and diarrhea following the eating of a banana split, they are MOST LIKELY suffering from which of the following?
- A gastrointestinal virus.
 - A bacterial infection of the intestines.
 - Food poisoning.
 - Lactose intolerance.
16. Mary is in an automobile accident and suffers a spinal cord injury. She has lost feeling in her lower body. Her doctor tells her that swelling is compressing a portion of her spinal cord. Which part of her cord is likely to be compressed?
- Ascending tracts in the cervical region of her spinal cord.
 - Descending tracts in the lumbar region of her spinal cord.
 - Descending tracts in the cervical region of her spinal cord.
 - The anterior white commissures.

17. Present from birth, this baby is missing nerve cells that would innervate the large intestine. It causes difficulty passing stool. The main symptom in the newborn is failure to have a bowel movement within 48 hours after birth. Other symptoms include a distended stomach and vomiting. What disease would you associate with these symptoms?
- Hirschsprung's disease
 - Pyloric stenosis
 - Crohn's disease
 - Irritable bowel syndrome
18. Tina falls while climbing a tree and lands on her back. Her frightened parents take her to the emergency room, where she is examined. Her knee-jerk reflex is normal, and she exhibits a plantar reflex (negative Babinski reflex). What do these results suggest?
- Tina suffered no damage to her spinal cord.
 - Tina has a spinal injury in the lumbar region.
 - Tina has a spinal injury in the cervical region.
 - Tina has injured one of her ascending nerve tracts.
19. Infants experience more problems with acid-base homeostasis and fluid and electrolyte balance based on which of the following?
- Low metabolic rate
 - Over consumption of milk
 - Low breathing rate
 - Body surface area
20. Which of the following structures is found in the liver and is a remnant of the umbilical vein in a fetus?
- Round ligament
 - Coronary ligament
 - Bile ductules
 - Falciform ligament
21. Trauma to the membrane that surrounds the heart associated with bleeding into the pericardial cavity might cause which of the following?
- Pleural effusion
 - Peritonitis
 - Cardiac tamponade.
 - Myocarditis.
22. A person with polio has lost the use of his leg muscles. In which area of his spinal cord would you expect the virus-infected motor neurons to be?
- Mid portion
 - Anterolateral gray horns
 - Anterior gray horns
 - Tail end
23. Exposure to an infectious agent during your day-to-day activities leads to which of the following?
- Passively acquired active immunity.
 - Naturally acquired passive immunity.
 - Makes no difference to him
 - Naturally acquired active immunity.
24. Samaki is a promising athlete in his nursing class and asserts that he has a higher cardiac reserves compared to his sedentary class mates. Why is this the case?
- He releases more carbon dioxide than average individuals.
 - His heart operates more efficiently due to training.
 - He produces less epinephrine.
 - He utilizes less oxygen than average individuals.

25. After staying up all night to study for Anatomy and Physiology exam, your eyes are bloodshot. The vasculature in what structure is congested and dilated?
- Retina
 - Palpebral conjunctiva
 - Bulbar conjunctiva
 - Cornea
26. Which of the following anterior pituitary hormones stimulates the gonads to secrete progesterone and/or testosterone?
- Melanocyte-stimulating hormone
 - Luteinizing hormone
 - Growth hormone
 - Thyroid Stimulating Hormone
27. An individual consumes a large amount of highly salted foods throughout the day. What might be some result of this?
- Bloating and Headaches
 - Excessive thirst, edema and hypertension
 - Tachycardia (rapid heartbeat) and tachypnea
 - Muscular weakness and fatigue
28. The amount of ADH that is released by the posterior pituitary glands varies with which of the following?
- Blood osmotic pressure.
 - Blood oxygen levels.
 - Blood glucose levels.
 - Blood calcium levels.
29. A baseball player is hit by a line drive on the temporal area of his skull. At the hospital the doctors give a Computed Tomography (CT) scan which shows an accumulation of blood between the dura mater and arachnoid mater, creating pressure on the cerebrum. The hemorrhage from the fracture would be located in which space?
- Subdural space
 - Epidural space
 - Nasal sinus
 - Straight sinus
30. Jennifer is at a stoplight and begins to accelerate into traffic when the light turns green. She stops suddenly as a truck runs the red light and is only a few inches away from her front bumper. Which effect would you **not** expect to see in Jennifer's body?
- Increased secretion of digestive juices
 - Increased secretion of epinephrine and norepinephrine
 - Airway dilation
 - Increased heart rate
31. During physical examination, your patient shows no effect when a light shines in the right eye, but shining a light into the left eye causes both pupils (right and left) to constrict. This could be caused by a lesion to which cranial nerve?
- optic
 - trigeminal
 - trochlear
 - facial
32. A patient in your care is suffering from a viral disease that destroys the neuronal cell bodies of the anterior gray horn. What symptoms would you expect to see in this patient?
- Interference with communication from one side of the brain to the other
 - Lead to muscle weakness or paralysis.
 - Constant diarrhea alternating with constipation
 - Interference with position and sense of balance.

33. The leading cause of death from cancer in men is which of the following?
- a) Pancreatic cancer.
 - b) Penile cancer.
 - c) Testicular cancer.
 - d) Prostate cancer.
34. In males, both the urinary system and which of the following system use the urethra?
- a) Integument
 - b) Reproductive system
 - c) Cardiovascular system
 - d) Respiratory system
35. An individual suffers from easily fractured bones. Which vitamin deficiency is he most likely experiencing?
- a) D
 - b) B
 - c) C
 - d) A
36. During a firework celebration, a firework exploded next to a technician's ear, resulting in hearing loss. What nerve was damaged?
- a) Trigeminal nerve
 - b) Auditory nerve
 - c) Vagus nerve
 - d) Optic nerve
37. During the procedure known as a spinal tap, with your help the doctor inserts a large needle into what region of the spinal cord?
- a) Sacral
 - b) Cervical
 - c) Thoracic
 - d) Lumbar
38. An individual is living on a tropical island during a period where temperatures are much higher than normal. He decides to begin vigorous exercise. He is at serious risk of which of the following?
- a) Heatstroke.
 - b) Heat cramps.
 - c) None of these choices are correct.
 - d) Heat exhaustion.
39. Which of these does NOT provide a physical or chemical barrier?
- a) Mucus
 - b) Urine
 - c) Macrophages
 - d) Saliva
40. A boy has been reported to lack fear and not show any stress in dangerous situations. These symptoms suggest issues with which area of the brain?
- a) Amygdala
 - b) Parietal lobe
 - c) Frontal lobe
 - d) Occipital lobe
41. Naturally acquired passive immunity is associated with which of the following?
- a) Transfer of IgG from mother to fetus
 - b) Receiving booster shots
 - c) Intravenous injection of antibodies
 - d) Vaccination

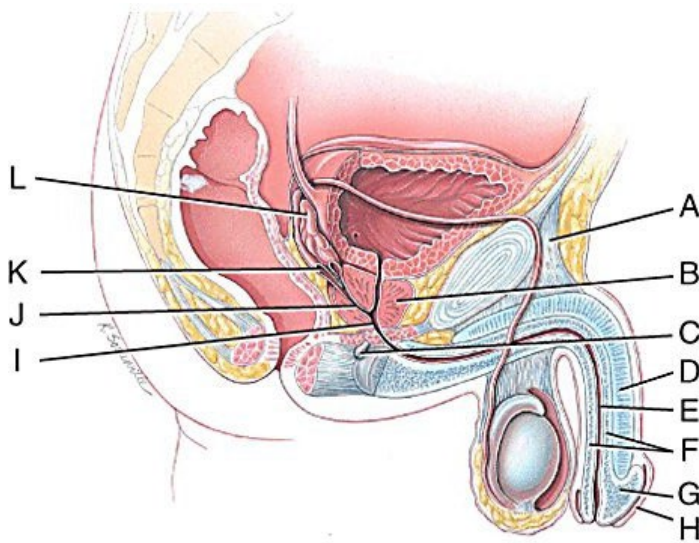
42. A gymnast on a balance beam would activate what areas of the medulla oblongata?
- Gustatory nucleus
 - Deglutition center
 - Vestibular nuclei and Gracile nucleus
 - Vomiting center
43. While working in the neonatal unit an infant was born with hydrocephalus. The CSF (cerebrospinal fluid) could not get out of the third ventricle. What passage was blocked?
- Interventricular foramen
 - Median aperture
 - Lateral aperture
 - Aqueduct of midbrain
44. Which of the labeled Endocrine glands secrete Human Growth Hormone, Thyroid Stimulating Hormone, Follicle Stimulating Hormone and other hormones?



- D
 - A
 - B
 - C
45. If type A blood is infused into a patient with type O blood, which of the following adverse reactions would you expect to observe in the patient? Select all that apply.
- Generalised itching
 - Severe diarrhea and vomit
 - There would be no adverse reactions as these blood types are compatible.
 - Hemolysis and agglutination of the transfused blood cells.
46. A patient in your care was in a Motor Vehicular Accident (MVA) and suffered some serious injuries including damage to a cranial nerve, which may result in death. Damage to which cranial nerve can be fatal?
- Vestibulocochlear
 - Oculomotor
 - Glossopharyngeal
 - Vagus
47. Puffer fish poison blocks voltage-gated sodium channels like a dam. What effect would this neurotoxin have on the function of neurons?
- The absolute refractory period would be shorter than normal.
 - Neurons would depolarize more rapidly.
 - The axon would be unable to generate action potentials.
 - Action potentials would lack a repolarization phase.

48. At a Community Health Centre, you evaluated a patient with apparent Wernicke's aphasia. What symptoms would he exhibit upon examination?
- No expression of fear or emotions
 - Difficulty pronouncing multisyllabic words
 - Can understand what is being said, but unable to repeat the words
 - Slow speech devoid of meaning
49. A diabetic who is not producing any insulin will suffer from a variety of ailments. Which of the following answers best describes this patient?
- Facilitated diffusion of glucose into cells.
 - Glycogenesis.
 - Active transport of amino acids into cells.
 - All the options
50. What is the normal volume of urine produced in humans?
- 1-2 L / day
 - 10 L / 24 hours
 - 1-2 L / hour
 - 3-4 L / week
51. A dialysis patient suffered a blockage in the proximal portion of the right subclavian artery. This will not only affect circulation to the right arm, but also to what other region?
- Left vertebral artery.
 - Left common carotid artery.
 - Left ventricle.
 - Left arm.
52. In comparison to a sedentary individual, a well-trained athlete will usually have all the following characteristics **except** which of the following?
- A higher resting cardiac output.
 - A higher stroke volume.
 - Resting bradycardia.
 - Hypertrophy of the heart.
53. If a patient is confined to bed and is unable to walk at all, which of the following will be serious possibility?
- Compromised blood flow to the kidneys
 - Pulmonary edema
 - Compromised blood flow to the intestines
 - Pressure ulcers
54. As we age, several changes occur in the urinary system **except** which of the following?
- Increase in the number of glomeruli.
 - Lower filtration rate.
 - Decreased blood flow.
 - Shrinking of the kidneys.
55. Which type of adaptive immunity will result from mother-to-baby IgA transfer via breast feeding?
- Artificially acquired passive immunity
 - Naturally acquired active immunity
 - Artificially acquired active immunity
 - Naturally acquired passive immunity
56. A runner preparing for a marathon will practice carbohydrate loading prior to the event. This will help to do what?
- Reduce ketone production.
 - Increase available glycogen.
 - Maintain blood pH at normal levels.
 - Increase endurance.

57. Which structure helps regulate the temperature of the testes?
- Cremaster muscles
 - Tunica vaginalis
 - Tunica albuginea
 - Seminiferous tubules
58. Which cells of the immune system are the primary targets of the HIV virus?
- All of these cells are affected by HIV
 - B cells
 - Helper T cells
 - Cytotoxic T cells
59. An individual in a coma who is not able to move, will most likely have a reduction in activity of the following?
- Both the skeletal muscle and respiratory pumps.
 - Respiratory pump.
 - Macrophages.
 - Skeletal muscle pump.
60. On your first day of work at the medical ward, you are left to care for a stroke patient that has a lesion on their trigeminal ophthalmic branch. Which symptoms would you expect this patient to exhibit?
- Paralysis of tongue muscles
 - Loss of sensation on anterior 2/3 of tongue
 - Loss of pain, temperature and touch sensation
 - Loss of smell
61. At which location in the figure do sperm and seminal vesicle secretions first join together in their path to the exterior?



- K
 - L
 - J
 - E
62. Which digestive aid, produced by the stomach, begins digestion by denaturing proteins?
- Mucus
 - Hydrochloric acid
 - Water
 - Bile
63. Which valve below prevents blood from flowing back into the right ventricle?
- Pulmonary semilunar valve
 - Aortic semilunar valve
 - Bicuspid valve
 - Tricuspid valve

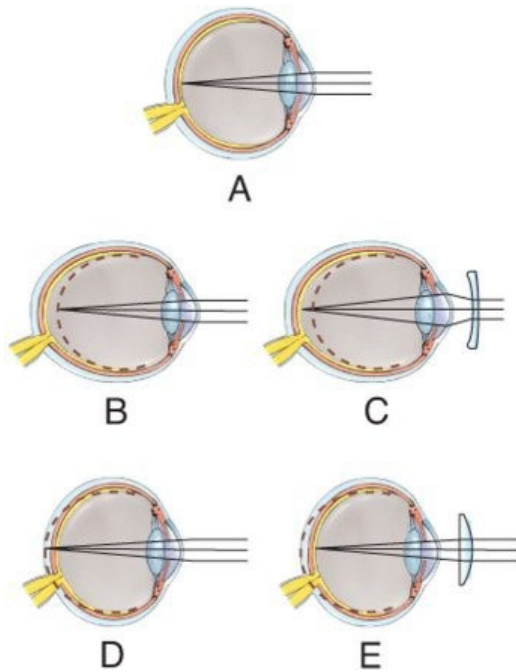
64. This 5 feet 8 inches tall patient shown is suffering from a disease caused by a pituitary hypersecretion of hGH during adulthood. Pay close attention to his height. Which answer below best describes his diagnosis?



- a) Cushing's syndrome
 - b) Acromegaly
 - c) Goiter
 - d) Gigantism
65. A forty year old woman experiences breast tenderness, slight swelling and some lumpiness each month during the third week of her menstrual cycle. She is most likely suffering from which of the following?
- a) Menopause
 - b) Fibrocystic breast disease.
 - c) Breast cancer.
 - d) None of these are correct
66. Consumption of salty food will cause an increase in which hormone?
- a) ADH
 - b) ANH
 - c) Renin
 - d) Aldosterone
67. Through which structure does blood pass from the right atrium to the right ventricle?
- a) Bicuspid valve
 - b) Interventricular septum
 - c) Mitral valve
 - d) Tricuspid valve
68. You smell fresh baked cookies, and your mouth begins to salivate. Which cranial nerves are involved?
- a) Auditory nerve and optic nerve
 - b) Facial nerve and vagus
 - c) Accessory nerve and trigeminal nerve
 - d) Olfactory nerve and glossopharyngeal nerve
69. Which type of hepatitis is spread via fecal contamination of objects such as food, clothing, toys, and eating utensils and is characterized by loss of appetite, malaise, nausea, diarrhea, fever, and chills?
- a) Hepatitis C
 - b) Hepatitis A
 - c) Hepatitis D
 - d) Hepatitis B
70. The actor that played superman, Christopher Reeve had a serious accident resulting in a crush injury to the C3-C5 spinal segments. What injuries would you expect to find on physical examination if any?
- a) He would be in a coma.
 - b) He could walk without difficulty.
 - c) He would have full range of motion in all extremities.

d) Might be unable to breathe on his own.

71. Student Nurse Sha-bin is having difficulty keeping up with her studies due to an uncorrected myopic eye. Which of the following images best represents Nurse Sha-bin diagnosis?



- a) A
- b) B
- c) C
- d) D

72. Which of following processes is the primary function of the mouth?

- a) Mixing and propulsion
- b) Speech
- c) Secretion
- d) Ingestion

73. How much of the total volume of body fluid is intracellular fluid?

- a) 10%
- b) 99%
- c) 2/3
- d) 1/3

74. The foramen ovale usually closes at birth. In the fetus, it allows for flow of blood between what chambers of the heart?

- a) Allows blood to enter the right atrium from the left atrium
- b) Allows blood to enter the left ventricle from the right ventricle
- c) Allows blood to enter the left atrium from the right atrium
- d) Allows blood to enter the left atrium to the aorta.

75. A patient presents with a fever, heart murmur, irregular heartbeat, fatigue, loss of appetite and night sweats. As a new nurse, your diagnosis would be that of endocarditis typically caused by which of the following?

- a) A virus.
- b) Cancer.
- c) An autoimmune condition.
- d) A bacterial infection.

76. The response of the body to decreasing blood pressure will NOT include which of the following?

- a) Increased vasoconstriction
- b) Formation of angiotensin II
- c) Stimulate the kidneys to secrete rennin
- d) Dehydration

77. It's Nurse Dee first day at the Pediatric Hospital and there is an outbreak of Pink eye which is an infection of the thin mucous membrane that protects the inner aspect of the eyelids and the anterior portion of the sclera. What membrane is involved?
- a) Choroid
 - b) Palpebral fissure
 - c) Conjunctiva
 - d) Lateral commissure
78. Blood leaving the left ventricle passes through which of the following structures?
- a) Pulmonary semilunar valve
 - b) Right atrium
 - c) Interventricular septum
 - d) Aortic semilunar valve
79. What is the difference between a person's maximum cardiac output and resting cardiac output?
- a) Cardiac reserve.
 - b) Venous return.
 - c) Peripheral resistance.
 - d) Stroke volume.
80. Which of the following blood types would be found in a person who is considered a universal recipient?
- a) O positive
 - b) AB positive
 - c) AB negative
 - d) O negative

END OF EXAMINATION