1) A “foreign” molecule which can invoke the immune response is called a(n):
   a) Hapten
   b) antibody
   c) immunoglobulin
   d) antigen

2) Active artificially acquired immunity is a result of:
   a) Antibodies passed on from mother to baby through breast milk.
   b) Vaccination.
   c) Injection of an immune serum.
   d) Antibodies passed on from mother to fetus through the placenta.

3) Cytotoxic T cells kill target cells:
   a) By secreting antibodies.
   b) By phagocytosis.
   c) By releasing oxidizing agents.
   d) Through insertion of perforins into the target’s membrane.

4) Lymphocytes that develop immunocompetence in the thymus are:
   a) T lymphocytes.
   b) NK cells.
   c) B lymphocytes.
   d) Cytotoxic T cells.

5) Lymphocytes that develop immunocompetence in the red bone marrow are:
   a) T lymphocytes.
   b) NK cells.
   c) B lymphocytes.
   d) Cytotoxic T cells.

6) Which of the following is a nonspecific barrier defense?
   a) Macrophages
   b) Natural killer cells
   c) Mucous membranes
   d) Complement proteins

7) Which of the following is not a sign of inflammation?
   a) Redness
   b) Fever
   c) Swelling
   d) Pain
8) Which is correctly matched?
   a) Helper T cells: recognize virus-infected cells
   b) B cells: suppress the immune response once the foreign antigen has been cleared from the body.
   c) Cytotoxic T cells: activated by antigens bound to MHC I
   d) Regulatory T cells: make antibodies

9) MHC II proteins are found on:
   a) Cytotoxic T cells.
   b) Antigen-presenting cells.
   c) Red blood cells.
   d) Helper T cells.

10) Which has the correct order of the phagocytosis process?
    a) Phagosome, phagolysosome, pseudopod, exocytosis
    b) Exocytosis, pseudopod, phagolysosome, phagosome
    c) Pseudopod, phagosome, phagolysosome, exocytosis
    d) Phagolysosome, pseudopod, phagosome, exocytosis

11) Without this cell, there is no immune response?
    a) Cytotoxic T cell
    b) B cell
    c) Macrophages
    d) Helper T cell

12) Infected cells of the pancreas would display a foreign antigen fragment on a(n):
    a) Immunoglobulin A
    b) MAC membrane complex
    c) MHC I
    d) MHC II

13) Which cell type does not induce phagocytosis?
    a) Natural killer cells
    b) Neutrophils
    c) Basophils
    d) Dendritic cells

14) What is the correct order for phagocyte mobilization? 1) Diapedesis 2) Leukocytosis 3) Chemotaxis 4) Margination
    a) 1, 2, 3, 4
    b) 2, 4, 1, 3
    c) 2, 3, 1, 4
    d) 1, 4, 3, 2
15) What antimicrobial and complement proteins used to prevent replication of viruses in neighboring cells?
   a) Interleukin
   b) Direct attack
   c) Cytotoxic T cells
   d) Interferon

16) True/False. Adaptive immunity is specific and systemic versus innate which is nonspecific and localized.

17) Which antigen-antibody complex utilizes cell-lysis rather than phagocytosis?
   a) Compliment
   b) Neutralization
   c) Agglutination
   d) Precipitation

18) Cytotoxic T cell uses what in order to identify self vs non-self?
   a) Helper T cells
   b) MHC Class I
   c) MHC Class II
   d) Able to recognize self vs non-self on its own

19) Which of the following is not an accessory organ of the digestive system?
   a) Salivary glands
   b) Teeth
   c) Tongue
   d) Intestines-alimentary canal

20) The phases of gastric secretion from first to last are:
   a) Gastric phase, cephalic phase, intestinal phase.
   b) Intestinal phase, gastric phase cephalic phase.
   c) Cephalic phase, gastric phase, intestinal phase
   d) Cephalic phase, intestinal phase, gastric phase.

21) The _______ is the first segment of the small intestine.
   a) Ileum
   b) Duodenum
   c) Ilium
   d) Jejunum

22) Digestion of carbohydrates and proteins by brush border enzymes occurs within the _______ of the small intestine.
   a) Villi
   b) Microvilli
   c) Circular folds
   d) Goblet cells-mucus production
23) Bile is stored and concentrated in the ______.
   a) Gallbladder
   b) Stomach
   c) Liver-produces bile
   d) Pancreas

24) In order to prevent self-digestion of the pancreas, activation of pancreatic proteases occurs in the:
   a) Duodenum
   b) Pancreas
   c) Stomach
   d) Gallbladder

25) What is the main organic molecule digested in the stomach?
   a) Proteins
   b) Lipids
   c) Carbohydrates
   d) Nucleic acids

26) What is the phase where voluntary contraction occurs in the esophagus?
   a) Pharyngeal-esophageal phase
   b) Buccal phase
   c) Cephalic phase
   d) Gastric phase

27) Which regulatory chemical (AKA HORMONES) stimulates gastric gland activity and motility?
   a) Gastrin
   b) Secretin
   c) Histamine
   d) CCK

28) The final product of carbohydrate digestion is:
   a) Glycogen
   b) Polysaccharides
   c) Monosaccharides
29) What is the primary substance used for energy production in the ruminant animal?
   a) Long Chain Fatty Acids
   b) VFAs
   c) Lipids
   d) Carbohydrates

30) Which of the following cells produce HCl?
    a) Parietal cells
    b) G cells
    c) Chief cells
    d) Enteroendocrine cells

31) Which of the following cells produce pepsinogen?
    a) G cells
    b) Enteroendocrine cells
    c) Parietal cells
    d) Chief cells

32) Trypsinogen is activated to trypsin by this intestinal enzyme:
    a) Maltase
    b) Enterokinase
    c) Aminopeptidase
    d) Procarboxypeptidase

33) The functions of the liver include all of the following EXCEPT:
    a) produce bile.
    b) Processing lipids.
    c) producing a filtrate
    d) degrading toxins and drugs from the blood.

34) Parasympathetic stimulation of the gastrointestinal tract will maintain normal peristalsis and gastric secretions.
   a) True
   b) False
35) Monogastric salivary glands produce all of the following EXCEPT:
   a) mucin
   b) salivary pepsin
   c) saliva
   d) Bicarbonate
   e) salivary amylase

36) Which correctly lists the four compartments of the ruminant stomach?
   a) Ventriculus, rumen, abomasum, reticulum
   b) Rumen, abomasum, omasum, promasum
   c) Abomasum, omasum, rumen, true stomach
   d) Rumen, abomasum, omasum, reticulum

37) What is ruminant saliva lacking that Monogastric saliva contains?
   a) Protease
   b) Urea
   c) Salivary Amylase
   d) Large amounts of water

38) Which is NOT a short chain fatty acid produced and absorbed in the rumen?
   a) Pectate
   b) Acetate
   c) Propionate
   d) Butyrate

39) Which sphincter is under skeletal muscle control?
   a) Cardiac sphincter
   b) External anal sphincter
   c) Pyloric sphincter
   d) Internal anal sphincter

40) Which is NOT a main property of the digestive tract?
   a) Motility
   b) Secretion
   c) Storage
   d) Host Defense

41) The basic functional unit of the kidney is the:
   a) Major calyx.
   b) Nephron.
   c) Glomerulus.
   d) Loop of Henle.
42) The glomerular capsule and glomerulus make up the:
   a) Collecting system.
   b) Renal corpuscle.
   c) Papilla.
   d) Loop of Henle.

43) The countercurrent mechanism of the nephron primarily relies on what kind of pressure?
   a) Hydrostatic Pressure
   b) Osmotic Pressure
   c) Both A and B
   d) Neither A or B

44) What is mainly reabsorbed in the collecting ducts?
   a) Water
   b) Hormones
   c) Mainly secretion occurs in the collecting ducts
   d) Nothing is reabsorbed in the collecting ducts

45) Which is not one of the three steps of urine formation?
   a) Glomerular Filtration
   b) Tubular reabsorption
   c) Tubular secretion
   d) Enzymatic breakdown