



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2021/2022

ACADEMIC YEAR

FIRST YEAR SECOND TRIMESTER

MAIN EXAMINATION

FOR BACHELOR OF SCIENCE IN NURSING DEGREE

COURSE CODE: NUR 122

COURSE TITLE: MEDICAL PHYSIOLOGY II


DATE: 27/04/2022

TIME: 09:00AM

INSTRUCTIONS TO CANDIDATES

Answer ALL Section one (1) MULTIPLE CHOICE QUESTIONS and ALL Section two (2) SHORT ANSWER QUESTIONS and any one (1) section THREE (3) LONG ANSWER QUESTION.

TIME: 3 Hours

This paper consists of 8 printed pages. Please Turn Over 
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SECTION ONE: MULTIPLE CHOICE QUESTIONS (ANSWER ALL)

1. Relaxation of the intercostals muscles and diaphragm results in:-
 - A. Downward and outward movement of the rib cage and elastic recoil of the lungs
 - B. Upward and inward movement of the ribcage and elastic recoil of the lungs
 - C. Downward and inward movement of the rib cage and elastic recoil of the lungs
 - D. Enlargement of the thoracic cavity from back to front
2. This is the reason why the SA node acts as heart's pacemaker
 - A. Because it has a poor cholinergic innervations
 - B. Because it has a rich sympathetic innervations
 - C. Because of its capability of generating impulses
 - D. Because it generates impulses at the highest rate
3. Vital capacity can be defined as:-
 - A. The maximum amount possible that can be expired following largest breath inspired
 - B. The amount breathed in and out during normal breathing
 - C. The gas remaining in the lungs at the end of forced expiration
 - D. The resting lung volume at the end of quiet breathing
4. The ventricular muscles accepts impulses directly from
 - A. AV node
 - B. Bundle of His
 - C. Right and left bundle branches
 - D. Purkinje system
5. Respiratory airway has:-
 - A. Smooth muscles
 - B. Goblet cells
 - C. Small diameter
 - D. Ciliated cells
6. This is the similarity between pulmonary and systemic circulation
 - A. Total capacity
 - B. Pulse pressure
 - C. Peripheral vascular resistance
 - D. The volume of the circulation per minute
7. Absorption of glucose by intestinal mucosal cells (enterocytes)
 - A. Relies on a carrier mechanism in the cell membrane
 - B. Is facilitated by the same chemical which blocks reabsorption of glucose in the proximal convoluted tubule
 - C. Normally takes place mainly in the ileum
 - D. Is enhanced by blockade of as active sodium transport in cells
8. The functions of the inferior, middle, and superior nasal conchae is:
 - A. For gaseous exchange
 - B. To produce voice
 - C. To protect against microorganisms
 - D. To create air turbulence allowing more air to get in touch with the surface of the upper respiratory tract hence moistened, filtered ad warmed

9. Swallowing is
- A. Reflexly coordinated in the cervical segments of the spinal cord
 - B. Necessarily associated with elevation of the larynx
 - C. Under voluntary control when the bolus is in the upper esophagus
 - D. More effective with the trunk in horizontal position
10. In which part of the respiratory system, gaseous exchange takes place?
- A. Alveoli
 - B. Pharynx
 - C. Larynx
 - D. Trachea
11. _____ is located between two pleural sacs and is the central compartment of the thoracic cavity?
- A. Hilum
 - B. Pleura
 - C. Mediastinum
 - D. Thoracic cage
12. Saliva has
- A. A higher concentration potassium than has plasma
 - B. Less than half the calcium ionic level of plasma
 - C. More than twice the iodide level of plasma
 - D. A normal PH between 5 and 6
13. Which of the following statements is true about involuntary breathing?
- A. It is controlled by the bronchioles
 - B. It is controlled by the pulmonary arterioles
 - C. It is controlled by the alveolar-capillary network
 - D. It is controlled by the neurons, located in the medulla and pons
14. The nerve that is concerned with hearing and equilibrium is:
- A. Vestibulocochlear.
 - B. Cochlear nerve.
 - C. Abducens.
 - D. Trigeminal
15. The enzymes present in pancreatic juice are
- A. Amylase, Trypsinogen, Peptidase, Rennin
 - B. Trypsinogen, Lipase, Amylase, Procarboxypeptidase
 - C. Peptidase, Pepsin, Amylase, Rennin
 - D. Maltase, Amylase, Trypsinogen, Pepsin
16. The thickest part of the heart wall is the
- A. Pericardium.
 - B. Epicardium.
 - C. Myocardium.
 - D. Endocardium
17. The peripheral nervous system is made of the following neurons except:

- A. Somatosensory neurons.
 - B. Sensory (primary afferent) neurons.
 - C. Somatic motor neurons.
 - D. Autonomic motor neurons.
18. Which one of the following is correct regarding larynx?
- A. It houses the vocal cords
 - B. It prevents the invading pathogens into the trachea
 - C. It is an organ made of cartilage and connects the pharynx to the trachea
 - D. All of the above.
19. Nerve fibers that carry signals toward the brain are called?
- A. Afferent or sensory
 - B. Efferent or sensory
 - C. Afferent or motor
 - D. Motor or efferent
20. Which of the following terms describes the volume of blood ejected by the heart in one minute?
- A. end-diastolic volume (EDV)
 - B. stroke volume (SV)
 - C. heart rate (HR)
 - D. cardiac output (CO)
21. A mixed nerve with both sensory and motor fibres that innervate visceral organs of the thoracic and abdominal cavities is:
- A. Accessory nerve.
 - B. Trigeminal nerve.
 - C. Vagus nerve.
 - D. Oculomotor nerve.
22. Which of the following is synthesized and stored in the liver cells?
- A. Galactose
 - B. Lactose
 - C. Glycogen
 - D. Arabinose
23. Norepinephrine is secreted by:
- A. All as pre-ganglionic axons
 - B. Somatic neurons
 - C. All parasympathetic post-ganglionic axons
 - D. Most sympathetic post-ganglionic axons with exception of those innervating sweat glands and some blood vessels of skeletal muscle

24. The Bitter and sour sensations are carried from the tongue on which cranial nerve?
- A. the glossopharyngeal nerve
 - B. the facial nerve
 - C. the vagus nerve
 - D. the hypoglossal nerve
25. The part of the brain that undertakes activities like control of blood pressure, respiration, coughing and sneezing reflexes, vascular tone, and emotional behaviour such as anger, excitement, sexual response, and reaction to pain or to pleasure is:
- a) Hypothalamus.
 - b) Higher brain (or cortical level).
 - c) Lower brain (or subcortical level).
 - d) Pre-frontal level.
26. Many homeostatic functions that are important in maintaining the stability of internal environment and a major control centre of the autonomic nervous system as well as a major link between the nervous and endocrine system are coordinated by:
- a) Hypothalamus.
 - b) Thalamus.
 - c) Cerebral cortex.
 - d) Midbrain.
27. Which of the following hormones are responsible for the "fight-or-flight" response?
- A. Epinephrine and norepinephrine.
 - B. Insulin and glucagon.
 - C. Estradiol and progesterone.
 - D. Thyroxine and melatonin
28. The primary target of the releasing and inhibiting hormones of the hypothalamus is the:
- A. Liver and adipose tissue
 - B. Gonads
 - C. Anterior pituitary
 - D. Bone marrow
29. The nerve which has wide distribution from the thoracic region to the abdominal viscera is:
- a) Vestibulochlear nerve.
 - b) Trochlear nerve.
 - c) Vagus nerve.
 - d) Trigeminal nerve.
30. This substance cannot pass through semipermeable walls of glomerulus
- A. Globin
 - B. Albumin
 - C. Blood cells
 - D. All of the above.
31. Duration of the absolute period, i.e., when the whole of heart is in diastole is
- A. 0.2 seconds

- B. 0.1 seconds
 - C. 0.4 seconds
 - D. 0.7 seconds
32. This happens if the proximal convoluted tubule is removed from nephron
- A. urine is not formed
 - B. quality and quantity of urine is unaffected
 - C. urine is more concentrated
 - D. urine is more diluted
33. Capillary hydrostatic pressure during filtration is built in the glomerulus as
- A. The size of Bowman's capsule is significantly large
 - B. An afferent arteriole is narrow compared to efferent
 - C. Bowman's capsule is cup-shaped
 - D. An efferent arteriole is narrow compared to afferent
34. Secretin and cholecystokinin are secreted in
- A. pyloric region
 - B. Ileum
 - C. duodenum
 - D. Oesophagus
35. Which of these hormones is made by the posterior pituitary?
- A. FSH
 - B. LH
 - C. ACTH
 - D. ADH
36. Which of the following hormones stimulates the production of pancreatic juice and bicarbonate?
- A. Insulin and glucagon
 - B. Cholecystokinin and secretin
 - C. Gastrin and insulin
 - D. Angiotensin and epinephrine
37. Na^+ and other carrier ions facilitate the absorption of
- A. amino acids and fructose
 - B. fatty acids and glycerol
 - C. fatty acids and glucose
 - D. amino acids and glucose
38. The absorption of nutrients from food is:-
- A. Gluconeogenesis
 - B. Digestion
 - C. Metabolism
 - D. Nutrition
39. Name the gland that is located at the base of the throat, just inferior to the laryngeal prominence (Adam's apple) .
- A. Pituitary.
 - B. Pineal gland.
 - C. Hypothalamus.
 - D. Thyroid
40. The specific sensory receptors sensitive to skin temperature are:

- A. Thermoreceptors.
 - B. Mechanoreceptors.
 - C. Nociceptors.
 - D. Neurogenic receptors.
41. The cardiac output is determined by:
- A. the volume of blood returning to the heart (preload)
 - B. afterload which depends on systemic vascular resistance
 - C. mechanical properties of the heart
 - D. all of the above
42. Mood disorders such as depression are usually as a result of malfunction of:
- a) Reticular activating system.
 - b) Higher brain function.
 - c) Broca's area.
 - d) Limbic system.
43. Arteries are blood vessels that:
- A. carry blood away from the heart
 - B. carry oxygenated blood
 - C. carry blood towards the heart
 - D. carry deoxygenated blood
44. The systemic circulation includes all of the following structures except one. Which is the exception?
- A. the aorta
 - B. the femoral vein
 - C. the superior vena cava
 - D. the pulmonary vein
45. All of the following are hormones of the anterior pituitary except:
- A. Human growth hormone (GH).
 - B. Follicle-stimulating hormone (FSH).
 - C. Parathyroid hormone (PTH).
 - D. Thyroid-stimulating hormone (TSH).
46. The visual sensory area of the cortex is located in:
- A. Occipital lobe
 - B. Frontal lobe
 - C. Parietal lobe
 - D. Temporal lobe
47. Pancreatic secretions
- A. Following vagal stimulation are rich in enzymes
 - B. Stimulated by acid in the duodenum are rich in enzymes
 - C. In response to secretin are low in bicarbonate
 - Contains enzymes which can digest polysaccharides to monosaccharide
48. The cells of the liver can
- A. convert amino acids into glucose
 - B. Activates certain hormones
 - C. Activates certain drugs

- D. Stores potassium
49. Which of the following arteries does not supply the gastro-intestinal tract?
- A. Renal artery
 - B. Celiac artery
 - C. Superior mesenteric artery
 - D. Inferior mesenteric artery
50. A major control centre of the autonomic nervous system that also link the nervous and the endocrine system with the pituitary gland is:
- A. Cerebrum.
 - B. Cerebellum.
 - C. Thalamus.
 - D. Hypothalamus.

SECTION TWO SHORT ANSWER QUESTIONS (SAQ) (ANSWER ALL QUESTIONS)

1. Discuss the functions of gastric juice (5 Marks)
2. Write short notes on the functions of the Cerebellum (5 Marks)
3. Explain how cardiac output is regulated (5 Marks)
4. Describe the flow of the cerebrospinal fluid (CSF) (5 Marks)
5. Explain the effects of sympathetic nervous system on the heart. (5 Marks)
6. List five (5) hormones of the anterior pituitary and state their functions (5 marks)

SECTION THREE LONG ANSWER QUESTIONS (SAQ) (ANSWER ONLY ONE)

1. Outline the structure of a nephron and describe the main processes of filtration, secretion and reabsorption that occur during the production of urine (20 Marks)
2. Discuss the control respiration in the human body under the following headings (20 marks):
 - a) Define respiration (2 Marks)
 - b) Nervous control of respiration (10 Marks)
 - c) Chemical control of respiration (6 Marks)
 - d) Voluntary control (2 Marks)