REV-01
BOP/46/51

2025/11

SET A

BACHELOR OF OPTOMETRY
FIRST SEMESTER
GENERAL PHYSIOLOGY
BOP-102
[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

Objective

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. Which muscle type is found in the heart?
   a. Skeletal b. Smooth
   c. Cardiac d. Striated

2. Which tissue transmits electrochemical signals?
   a. Muscle b. Nervous
   c. Connective d. Epithelial

3. Pinocytosis is best described as:
   a. Engulfing large particles b. Absorbing extracellular fluid
   c. Pumping ions against a gradient d. Breaking down pathogen

4. Homeostasis is maintained by the interplay of:
   a. Effector, receptor, control center b. Neurons, glia, synapses
   c. Arteries, veins, capillaries d. ATP, NADH, FADH2

5. Which body system is responsible for gas exchange?
   a. Digestive b. Respiratory
   c. Renal d. Endocrine

6. Which type of muscle contraction occurs without a change in muscle length?
   a. Isotonic b. Isometric
   c. Eccentric d. Concentric

7. What triggers the release of calcium ions in muscle contraction?
   a. ATP hydrolysis b. Acetylcholine release
   c. Tropomyosin binding d. Sodium influx

8. What is the role of ATP in the sliding filament mechanism?
   a. Binds to actin b. Breaks actin-myosin cross-bridges
   c. Releases calcium ions d. Blocks acetylcholine

9. Which muscle type is striated and involuntary?
   a. Skeletal b. Cardiac
   c. Smooth d. Visceral

10. What causes the sarcomere to shorten during contraction?
    a. Myosin filaments contracting b. Actin filaments sliding past myosin
    c. Z lines moving apart d. Troponin dissolving

11. Why does food taste bland when you have a stuffy nose?
    a. Tongue receptors are blocked
    b. Gustatory cortex shuts down
    c. Flavor requires combined taste and smell
    d. Saliva production decreases

12. Besides hearing, what function does the inner ear serve?
    a. Sinus pressure regulation
    b. Body balance
    c. Temperature sensing
    d. Speech production

13. Which organ's function is NOT directly controlled by the autonomic nervous system?
    a. Heart
    b. Skeletal muscles
    c. Digestive system
    d. Pupil dilation

14. During depolarization of a neuron, which ion rapidly enters the cell?
    a. Potassium (K+)
    b. Chloride (Cl-)
    c. Sodium (Na+)
    d. Calcium (Ca2+)

15. Which reflex is mediated by the brainstem?
    a. Knee-jerk reflex
    b. Gag reflex
    c. Withdrawal reflex from pain
    d. Blinking to a bright light

16. Damage to the medulla oblongata would most likely impair:
    a. Vision processing
    b. Voluntary arm movements
    c. Breathing and heart rate
    d. Memory formation

17. How many pairs of spinal nerves are parts of the somatic nervous system?
    a. 12
    b. 31
    c. 24
    d. 8

18. Damage to the facial nerve (VII) would most likely impair:
    a. Vision
    b. Hearing
    c. Facial expressions
    d. Tongue movement

19. How many bones are present in the adult human body?
    a. 200
    b. 206
    c. 210
    d. 208

20. Which is NOT a function of the skin?
    a. Vitamin D synthesis
    b. Temperature regulation
    c. Oxygen absorption
    d. Pain detection

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Descriptive

Time : 2 hr. 30 mins. Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. Describe the types of passive transport in details. Write the difference between phagocytosis and pinocytosis. 5+5=10

2. Explain in detail about Homeostasis in human body. 10

3. Mention the functions of epithelial tissue. Write about how the respiratory system helps in cellular respiration. Explain the structure of neuron with the help of a diagram. 2+3+5=10

4. Write the difference between parasympathetic nervous system and sympathetic nervous system. Explain about the four types of muscle contractions. 5+5=10

5. Explain in detail about the functions of cranial nerve. 10

6. Write step by step process of nerve impulse conduction. 10

7. Discuss point wise about the: 5+5=10
   a) Functions of Automatic Nervous System.
   b) Functions of Sense Organs.

8. Explain in detail with diagram development of Cornea and Ciliary body. 5+5=10

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