REV-01
BOT/15/20

2025/05

SET A

B.Sc. OPERATION THEATRE TECHNOLOGY
SECOND SEMESTER
PHYSIOLOGY-II
BOT-202

[USE OMR SHEET FOR OBJECTIVE PART]

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

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

Objective

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

1. During inspiration, which of the following changes occurs in the thoracic cavity?
   a. Diaphragm relaxes and moves upward
   b. Thoracic volume increases, intrapulmonary pressure decreases
   c. Intercostal muscles contract, decreasing thoracic volume
   d. Alveolar pressure increases above atmospheric pressure
2. Which part of the brain primarily regulates the basic rhythm of respiration?
   a. Cerebellum
   b. Thalamus
   c. Medulla oblongata
   d. Cerebral cortex
3. What is the term for the volume of air inhaled or exhaled during normal, quiet breathing?
   a. Residual Volume
   b. Tidal Volume
   c. Vital Capacity
   d. Inspiratory Reserve Volume
4. Which of the following best describes how oxygen is transported in the blood?
   a. Dissolved in plasma only
   b. Carried by platelets
   c. Bound to white blood cells
   d. Mostly bound to hemoglobin in red blood cells
5. Which of the following best describes the role of the diaphragm during expiration?
   a. It contracts to push air out of the lungs
   b. It remains unchanged during expiration
   c. It relaxes and moves upwards, reducing thoracic volume
   d. It expands to increase thoracic volume
6. The gap between two neurons is called:
   a. Axon hillock
   b. Synapse
   c. Node of Ranvier
   d. Nissl body
7. The fight or flight response is mainly regulated by:
   a. Parasympathetic nervous system
   b. Somatic nervous system
   c. Sympathetic nervous system
   d. Central nervous system
8. Which part of the brain regulates body temperature?
   a. Thalamus
   b. Cerebellum
   c. Hypothalamus
   d. Medulla oblongata
9. Which part of the neuron receives impulses from other neurons?
   a. Axon
   b. Dendrite
   c. Soma
   d. Myelin sheath

10. The autonomic nervous system is divided into:
    a. Brain and spinal cord
    b. Sympathetic and parasympathetic divisions
    c. Dendrites and axons
    d. Motor and sensory neurons

11. Insulin is secreted by which cells of the pancreas?
    a. Alpha cells
    b. Beta cells
    c. Delta cells
    d. Acinar cells

12. The adrenal medulla secretes:
    a. Cortisol
    b. Aldosterone
    c. Epinephrine and norepinephrine
    d. Androgens

13. Oxytocin is responsible for:
    a. Decreasing blood glucose
    b. Stimulating milk ejection and uterine contractions
    c. Regulating basal metabolism
    d. Controlling sleep cycle

14. Growth hormone mainly acts on:
    a. Thyroid gland
    b. Bone and muscle tissues
    c. Kidneys
    d. Pancreas

15. Follicle Stimulating Hormone in females stimulates:
    a. Ovulation
    b. Uterine contraction
    c. Follicle development in ovaries
    d. Milk production

16. Spermatogenesis occurs in which part of the male reproductive system?
    a. Epididymis
    b. Seminiferous tubules
    c. Seminal vesicle
    d. Prostate gland

17. Which hormone is primarily responsible for the development of male secondary sexual characteristics?
    a. Estrogen
    b. Progesterone
    c. Testosterone
    d. Luteinizing hormones

18. Which of the following is the correct sequence of events during the menstrual cycle?
    a. Ovulation → Follicular phase → Luteal phase → Menstruation
    b. Menstruation → Ovulation → Luteal phase → Follicular phase
    c. Menstruation → Follicular phase → Ovulation → Luteal phase
    d. Follicular phase → Luteal phase → Ovulation → Menstruation

19. Which structure in the female reproductive system is responsible for the production of the ovum?
    a. Uterus
    b. Ovaries
    c. Fallopian tubes
    d. Cervix

20. What is the role of Blood-Testis barrier?
    a. Provide nourishment to the sperm
    b. Preventing the sperm from getting attack by the immune system
    c. Aiding in motility of sperm
    d. None of the above

-- --- --

Descriptive

Time : 2 hr. 30 mins. **Marks : 50**

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

1.	Define respiration and explain the mechanism of inhalation and exhalation.	1+4.5+4.5=10
2.	Discuss the physiological variables that affect breathing and explain their impact on lung volumes with an example of diseases associated with each factor.	10
3.	Explain the ventricles of the brain. Write the functions of the ventricles.	10
4.	Describe the blood supply of the brain with special reference to the Circle of Willis with a labelled diagram. What is the significance of Circle of Willis?	10
5.	Discuss the physiology of adrenal medullary hormones and their role in the "**fight or flight**" response.	10
6.	Describe the feedback mechanisms involved in the regulation of thyroid hormones.	10
7.	Define spermatogenesis and describe the phases involved in the process. Explain the hormonal regulation of spermatogenesis.	1+7+2=10
8.	Explain the brain-testicular axis, its components, and its role in regulating male reproductive function.	10

= = *** = =