

2021

PHYSIOLOGY

PAPER-II

Time Allowed — 3 Hours

Full Marks — 200

If the questions attempted are in excess of the prescribed number, only the questions attempted first up to the prescribed number shall be valued and the remaining ones ignored.

Answers may be given either in English or in Bengali but all answers must be in one and the same language.

Group-A

Answer any six questions.

1. (a) Give a brief account of the ultrastructure of the skeletal muscle fiber with a schematic diagram.
(b) What is sarco-tubular system? Name its different components. (8+4)+(4+4)=20
2. Explain the following properties of nerve fibers: 5×4=20
 - (a) All-or-none response
 - (b) Refractory period
 - (c) Indefatigability
 - (d) Accommodation
3. (a) Name the different layers of the cerebral cortex.
(b) Mention the location of pyramidal cells in the human brain.
(c) Briefly describe the histological section of the spinal cord with a neat labelled diagram. 6+2+(6+6)=20
4. (a) Describe the structure of the middle ear.
(b) Discuss the functions of the middle ear as an acoustic transformer.
(c) Name the receptors for hearing. 6+10+4=20
5. (a) What are myopia and hypermetropia?
(b) Mention the causes for these abnormalities.
(c) How can they be rectified? (2+2)+(4+4)+(4+4)=20
6. (a) Distinguish between: somatic reflex and autonomic reflex.
(b) What do you mean by consolidation of memory?
(c) Mention the stages of non- REM sleep. 8+6+6=20

7. (a) What is the normal body temperature of an adult human?
(b) State the concept of 'set point' for temperature control.
(c) What are the physical processes of body temperature regulation? 2+8+10=20
8. (a) Discuss the role of GH on cellular metabolism.
(b) Mention the abnormalities caused by hypoactivity and hyperactivity of GH before and after puberty. 12+8=20
9. (a) Compare the histological structure of euthyroid, hyperthyroid and hypothyroid gland with diagram.
(b) Name the hormones released by thyroid gland.
(c) Discuss about the calorogenic functions of thyroid hormone.
(d) What is reverse T_3 ? (6+3)+3+6+2=20
10. (a) Draw a labelled histological structure of the testis.
(b) Outline the steps of spermatogenesis with a schematic diagram. 6+14=20

Group-B

Answer any four questions.

11. (a) Classify nerve fibers.
(b) What is Wallerian degeneration?
(c) What is transneuronal degeneration?
(d) What do you mean by superficial and deep reflexes? 8+4+4+(2+2)=20
12. (a) Describe with a neat diagram the origin, course and termination of corticospinal/ pyramidal tract.
(b) What do you mean by upper motor neurone and lower motor neurone? (4+12)+(2+2)=20
13. (a) Discuss briefly the physiological basis of light accommodation in the human eye.
(b) Describe with a diagram the histological structure of the olfactory neuroepithelium. 12+(2+6)=20
14. (a) What is insensible perspiration?
(b) What is sebum?
(c) Discuss briefly the functions of the skin. 4+4+12=20

15. (a) Why posterior pituitary is known as neurohypophysis?
(b) Write a brief note on 'milk ejection reflex'.
(c) In the light of functional aspect, discuss the significance of the name 'Antidiuretic Hormone'.
(d) Mention one function of oxytocin in male body. 2+8+8+2=20
16. (a) Mention the names and origin of hormones regulating calcium homeostasis.
(b) Give a brief account of their function in maintenance of normal calcium levels in blood. 8+12=20
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