

PHYSIOLOGY

PAPER –I

Time : 3 hours
Max. Marks : 100

PHY/D/10/36/I

**Attempt all questions in order.
Each question carries 10 marks.**

Write short notes on:

1. Define haemostasis. Draw flow diagram of intrinsic and extrinsic pathway of blood clotting. Name intra-vascular anticoagulant and their mode of action.
2. Define functional residual capacity. What is its physio-clinical significance? Give one method of its measurement.
3. Define term clearance of a substance. What are the substances commonly used for it? Give its applications to assess kidney functions.
4. What are Baroreceptors? Give their classification, location and functions. How do they behave in an individual suffering from essential hypertension?
5. Draw a well labeled diagram of innervation of urinary bladder. Add a note on abnormalities associated with it.
6. Define Hypoxia and its types. Justify the role of oxygen therapy in each type (if any).
7. Define anaemia. Give its etiological and morphological classification. List the characteristic features of the most common anaemia found in India.
8. Define ejection fraction. Give its physio-clinical significance and a non-invasive method of evaluating it.
9. Describe the ultrastructure of respiratory membrane. What are the factors that determine the rate of diffusion across it?
10. List the hemolytic diseases in a newborn. Give the physiological basis of their prevention and management.

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PAPER –II

Time : 3 hours
Max. Marks : 100

PHY/D/10/36/II

**Attempt all questions in order.
Each question carries 10 marks.**

Write short notes on:

1. What is cardia-achlasia? Give its physiological basis and various approach for its management.
2. What do you understand by the term 'Dietary Fibers'? Describe briefly its role in regulation of body metabolisms. Add a note on its physiological significance.
3. Describe the physiological mechanisms by which gastric mucosa protects itself against the strong acid secretion. Add a note on limitation of each mechanism.
4. What is Hirschsprung disease? Give its physiological basis, clinical features and management.
5. List the common causes of male infertility. Give definition, characteristic features and treatment of each one of them in detail.
6. Define respiratory quotient (RQ) and give its physiological significance. Describe the factors affecting it.
7. Define obesity. How it can be assessed? Give its etiology. Add a note on its control.
8. Name bile salts. Describe the driving forces of entero-hepatic circulation. Why this is required?
9. Classify oral contraceptive. Give physiological basis of mechanism of their action. Why synthetic preparations are given?
10. Name the various temperature regulating mechanism activated on exposure to thermal stress. Give the physiological basis of injuries occurring due to hypothermia.

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PAPER –III

Time : 3 hours
Max. Marks : 100

PHY/D/10/36/III

Attempt all questions in order.
Each question carries 10 marks.

Write short notes on:

1. Define narcolepsy. Give its physio-clinical significance. Add a note on its management.
2. What is Alzheimer's disease? Give its salient features and physiological basis thereof.
3. Define pain. How does it differ from other sensations? Give its types. Explain the mechanism of central inhibition of pain.
4. What is Blood Brain Barrier? How it is developed? List its functions and physio-clinical significance.
5. Explain the mechanism underlying: "What the muscles are doing with what they should be doing?"
6. What is endocochlear potential? Give the physiological basis of its generation. What is its clinical importance?
7. Give a detailed account of "Excitation contraction coupling" mechanism in the three types of the muscles in the body.
8. What is Inverse stretch reflex? Draw diagram of its reflex arc. Give its role in control of body posture.
9. What is Aphasia? Give its types and characteristic features with physiological justification.
10. Explain briefly the physiological basis of colour perception. List the major abnormalities associated with it.

PHYSIOLOGY

PAPER –IV

Time : 3 hours
Max. Marks : 100

PHY/D/10/36/IV

Attempt all questions in order.
Each question carries 10 marks.

Write short notes on:

1. What is Donnan effect? Give Gibb's Donnan Equation and its biological application.
2. Define the process of osmosis. Give examples where the body employs the process of osmosis. Add a note on its clinical application.
3. What are the various types of intercellular connections? Explain their role in the body. Add a note on genetic defects associated with them.
4. State the Poiseuille-Hagen formula. Justify its application to systemic circulation in the body.
5. What are transport-proteins? Give their types. Explain the various techniques by which they can be studied.
6. What is work of breathing? Give the percentage contribution of each component. Name two common conditions in which work of breathing gets altered.
7. Define 'G' proteins. Give their classes. Elaborate G-protein mediated signal transduction pathways.
8. Describe physiological anatomy of thyroid gland. Describe the steps involved in the synthesis of thyroid hormones. Enumerate anti-thyroid substances and their mode of action.
9. What is E.M.G.? Give the physiological basis of its occurrence. Give its clinical application.
10. Name loop diuretics. Give their mechanism of action. Add a note on Bartter's syndrome.