

# Question Paper

Exam Date & Time: 23-Dec-2021 (10:20 AM - 01:00 PM)

**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**FIRST MBBS DEGREE EXAMINATION - DECEMBER 2021**  
**SUBJECT: PHYSIOLOGY - PAPER I**

Marks: 80

Duration: 160 mins.

Answer all the questions.

**Essay questions:**

1. A 50 year-old woman burned her hands on the stove without experiencing any pain. Neurological examination revealed loss of pain and temperature sensation covering shoulder and upper extremity with intact fine touch and proprioception. There was no loss of any of the sensations in the trunk and lower limbs. There were no disturbances of motor functions. A diagnosis of syringomyelia was made.
  - 1A. Draw a labelled diagram showing the dorsal column medial lemniscal pathway and lateral spinothalamic tract whose fibers originate from the upper limbs.
  - 1B. Indicate the most likely site of lesion within the spinal cord and explain the basis for the pattern of sensory loss seen in the case.
  - 1C. List the differences between slow and fast pain.

(6+2+2 = 10 marks)
2. Describe the actions and regulation of secretion of hormones of posterior pituitary.

(6+4 = 10 marks)

**3. Short answer questions:**

- 3A. List the features of hemiplegia. Give the physiological basis for any two features.
- 3B. Briefly explain the functions of cerebrospinal fluid. Add a note on lumbar puncture.
- 3C. Explain the different types of aphasias. How can they be differentiated from one another?
- 3D. Explain the connections and functions of vestibulocerebellum. Give the manifestations of bilateral lesions of the vestibulocerebellum.
- 3E. Draw a labelled diagram of the reflex arc of the simple stretch reflex. Give its physiological functions
- 3F. Explain the cause and features of cretinism.
- 3G. Briefly explain the actions of Parathormone in the maintenance of calcium homeostasis.
- 3H. Give the site of production, circulation, site of drainage and functions of aqueous humor.
- 3I. Explain the mechanism of frequency discrimination by the inner ear.
- 3J. Explain how the eye accommodates for near vision.
- 3K. Briefly describe the endometrial changes during a 28-day-menstrual cycle.
- 3L. List the factors essential for spermatogenesis. How is spermatogenesis affected in cryptorchidism?
- 3M. Draw a labelled diagram of neuromuscular junction in skeletal muscle. List the events taking place across this junction.
- 3N. Explain excitation contraction coupling in skeletal muscle
- 3O. Define Wallerian degeneration of nerve fibers. Explain the histological changes that occur during nerve degeneration and regeneration.

(4 marks X 15 = 60 marks)

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# Question Paper

Exam Date & Time: 24-Dec-2021 (10:20 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION FIRST MBBS DEGREE EXAMINATION - DECEMBER 2021 SUBJECT: PHYSIOLOGY - PAPER II

Marks: 80

Duration: 160 mins.

**Answer all the questions.**

**Write brief, clear and legible answers.**

**Illustrate your answers with diagrams and flow charts wherever appropriate.**

### Essay questions:

1. Orthostatic hypotension due to a malfunction in the BP regulatory reflex was diagnosed in a 65-year-old man who had autonomic neuropathy and has been experiencing frequent episodes of syncope as he got out of bed in the mornings.
  - 1A) Name the reflex affected in the above case (1)
  - 1B) With respect to the affected reflex, name the receptors, their location and their activation and response.(3)
  - 1C) Describe briefly other mechanisms regulating blood pressure (6)
2. Explain the phases of gastric secretion. Give the different factors affecting gastric secretion  
(5+5 = 10 marks)

### 3. Short answer questions:

- 3A) Briefly explain the factors affecting venous return. (4)
- 3B) Draw an ECG from limb lead II, giving the cause for each wave. Add a note on PR interval. (4)
- 3C) Explain the peculiar features of coronary circulation. Add a note on myocardial infarction. (4)
- 3D) Give the normal values of various lung volumes and capacities with the help of a spirogram. (4)
- 3E) Explain carbon dioxide transport in blood. (4)
- 3F) Define Hypoxia. List the different types giving one example for each. (4)
- 3G) Explain decompression sickness. (4)
- 3H) Describe briefly the structure and functioning of Juxtaglomerular apparatus. (4)
- 3I) Define GFR. Give its normal value. List the factors affecting it (4)
- 3J) Describe micturition reflex with the help of a diagram (4)

- 3K) Name the thermoregulatory centers and mention where they are situated. Add a note on pathogenesis of fever(4)
- 3L) Define erythropoiesis. List the changes taking place during its different stages. (4)
- 3M) Explain the role of neutrophils in immunity (4)
- 3N) Define Landsteiner's law. Add a note on classification of ABO blood groups (4)
- 3O) Briefly explain functions of saliva (4)

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