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**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (PHYSIOLOGY) DEGREE EXAMINATION – DECEMBER 2023**  
**PAPER I**

Monday, December 04, 2023

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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**✍ Answer All questions.**

**✍ Draw diagrams wherever necessary.**

**✍ Long Essays:**

1. Discuss the role of ion channels and gates in membrane excitation.

(15 marks)

2. Describe the different theories of hearing.

(15 marks)

**3. Short Essays:**

3A. Regulation of cell volume

3B. Nuclear receptors

3C. Secondary active transport

3D. Endoplasmic reticulum

3E. Adolf Fick

3F. Nomenclature of coagulation factors

3G. Micropuncture methods to study nephron function

3H. Cell membrane models

3I. Plasmapheresis

3J. Surface tension

(7 marks × 10 = 70 marks)



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**PAPER II**

Tuesday, December 05, 2023

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

*✍* **Answer ALL questions.**

*✍* **Draw Diagrams wherever necessary**

*✍* **Long Essays:**

1. Discuss in details the mechanisms involved in formation of a dilute urine  
(15 marks)

2. Describe the special features and regulation of coronary circulation  
(15 marks)

3. **Short Essays:**

3A. Ventilatory function tests

3B. Types of cardiac action potentials

3C. Carbon monoxide poisoning

3D. Generation of respiratory rhythm

3E. Renal compensation in metabolic acidosis

3F. Cystometrogram

3G. Consequences of biliary obstruction

3H. Treatment modalities of peptic ulcer disease

3I. Iron absorption in gut

3J. Turbulent blood flow

(7 marks × 10 = 70 marks)



**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (PHYSIOLOGY) DEGREE EXAMINATION – DECEMBER 2023**  
**PAPER III**

Wednesday, December 06, 2023

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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✍ **Answer ALL questions.**

✍ **Long Essays:**

1. Describe the role of hypothalamus in feeding behavior and thirst. (15 marks)
  
2. Describe the actions of insulin and regulation of its secretion. (15 marks)

3. **Write briefly on:**

- 3A. Consequences of castration in a child.
- 3B. Functions of placenta.
- 3C. Factors responsible for parturition.
- 3D. Myasthenia gravis.
- 3E. Antithyroid drugs.
- 3F. Impedance matching.
- 3G. Mechanism of accommodation in eye.
- 3H. Pain pathway from face.
- 3I. Sensory coding in somatosensory system.
- 3J. “Morning after” pill.

(7 marks × 10 = 70 marks)



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**MANIPAL ACADEMY OF HIGHER EDUCATION**  
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**PAPER IV**

Thursday, December 07, 2023

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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✍ **Answer All questions.**

✍ **Long Essays:**

1. Discuss the pathophysiology and principles of treatment of cardiac failure. (15 marks)

2. Discuss the importance of clinical examination of sensory system. (15 marks)

3. **Write briefly on:**

3A. Uses of electroencephalogram

3B. Pre-Botzinger complex

3C. Azotemia

3D. Cretinism

3E. ST elevation in ECG

3F. Audiometry

3G. Cholecystography

3H. Price-Jones curve

3I. Urinary ketosteroids

3J. Radioimmunoassay

(7 marks × 10 = 70 marks)

