

Reg. No.

MANIPAL ACADEMY OF HIGHER EDUCATION
MD (PHYSIOLOGY) DEGREE EXAMINATION – JUNE 2020

SUBJECT: PAPER I: GENERAL PHYSIOLOGY INCLUDING HISTORY OF PHYSIOLOGY

Wednesday, June 03, 2020

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

- ✍ **Answer all questions.**
- ✍ **Draw diagrams wherever necessary.**

✍ **Long Essays:**

1. Discuss the mechanisms of membrane transport of solutes. (15 marks)
2. Describe the principles of homeostasis. (15 marks)

3. **Short Essays:**

- 3A. Nernst equation
- 3B. Hypokalemic alkalosis
- 3C. Regulation of cell volume
- 3D. Catalytic Receptor-Linked signal transduction pathways
- 3E. Lysosomal diseases
- 3F. H.E. Huxley
- 3G. Application of Kirchoff's laws of circuits
- 3H. Hormone-sensitive lipase
- 3I. G.H. Whipple
- 3J. Renal tubular buffers

(7 marks × 10 = 70 marks)



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**SUBJECT: PAPER II: SYSTEMIC PHYSIOLOGY (SYSTEM PROVIDING TRANSPORT,
NUTRITION AND ENERGY) INCLUDING COMPARATIVE PHYSIOLOGY**

Thursday, June 04, 2020

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Describe the “countercurrent mechanism” in the kidney. (15 marks)

2. Describe the regulation of heart rate. (15 marks)

3. **Write briefly on:**

- 3A. Paralytic ileus
- 3B. Ventilation-Perfusion ratio in health and disease
- 3C. Enteric nervous system
- 3D. Windkessel vessels
- 3E. Concept of “Set-point” for body temperature control
- 3F. Chemical control of respiration
- 3G. Factors regulating coronary blood flow
- 3H. Control of salivary secretion
- 3I. CO₂ dissociation curves
- 3J. Glomerulotubular balance

(7 marks × 10 = 70 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION**MD (PHYSIOLOGY) DEGREE EXAMINATION – JUNE 2020****SUBJECT: PAPER III: SYSTEMIC PHYSIOLOGY (SYSTEM CONCERNED WITH PROCREATION, REGULATION AND NEURAL CONTROL)**

Friday, June 05, 2020

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL the questions.

✍ Draw diagrams wherever necessary.

✍ Long Essay:

1. Explain the divisions, connections, functions of cerebellum. Describe the physiological basis for the clinical features of cerebellar dysfunction.

(15 marks)

2. Describe the regulation of secretion and actions of Insulin. Explain metabolic dysfunctions in diabetes mellitus.

(15 marks)

3. Write short notes on:

3A. Explain the hormones regulating the different phases of menstrual cycle.

3B. Explain mechanism of differentiating pitch and intensity of sound.

3C. Outline the pathway of speech

3D. Outline the steps in the synthesis of thyroid hormones. Explain the physiological basis of any two antithyroid drugs.

3E. Trace the pain pathway from the face. Add a note on Bell's palsy.

3F. Explain the actions of testosterone.

3G. Explain the actions of hormones in calcium homeostasis.

3H. Discuss the properties of sensory receptors.

3I. Explain the theory of colour vision and add a note on colour blindness.

3J. Describe the common defects of the image-forming mechanism of human eye.

(7 marks × 10 = 70 marks)



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SUBJECT: PAPER IV: APPLIED PHYSIOLOGY INCLUDING RECENT ADVANCES

Saturday, June 06, 2020

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Describe the pathophysiology of cardiogenic shock.

(15 marks)

2. Describe liver function tests, clearly indicating the nature of the function assessed by each test.

(15 marks)

3. **Write briefly on:**

3A. Growth curves

3B. Standard deviation

3C. Hemolytic disease of the newborn

3D. Glaucoma

3E. Non-invasive techniques in the assessment of cardiac function

3F. Causes of glycosuria

3G. J-receptors

3H. Investigations done for an infertile couple

3I. Adrenogenital syndrome

3J. Neuroglia

(7 marks × 10 = 70 marks)

