

MANIPAL UNIVERSITY
FIRST MBBS DEGREE EXAMINATION – SEPTEMBER 2015
SUBJECT: PHYSIOLOGY– PAPER I (ESSAY)

Friday, September 11, 2015

Time: 10:20 – 13:00 Hrs.

Maximum Marks: 80

✍ **Essays:**

1. Show in a neatly labelled diagrams, the following areas and their functions in cerebral cortex:
a) Motor areas b) Somatosensory areas c) Prefrontal area
2. Describe the neuromuscular transmission in skeletal muscle. Why is neuromuscular junction called a *safe junction*?

(10 marks × 2 = 20 marks)

3. **Short answer questions:**

- 3A. Mention the components and functions of sarcotubular system in skeletal muscle.
- 3B. Describe the functions of specific and nonspecific relay nuclei of nuclei of thalamus.
- 3C. Comment on the urinary bladder and bowel control in a patient *immediately after* and *during the recovery of* complete spinal cord transection at mid thoracic level.
- 3D. Name the deep nuclei of cerebellum. Mention the effects of damage to different deep nuclei. Account for the observed effects.
- 3E. Explain the genesis of postsynaptic potentials and their effects.
- 3F. Explain the actions and regulation of secretion of mineralocorticoids. Mention the basis of *aldosterone escape*.
- 3G. Give the basis for the following:
 - i) Pigmentation in Addison's disease
 - ii) Osteoporosis following prolonged glucocorticoid administration
 - iii) Sterility in cryptorchidism
 - iv) Virilization in adrenogenital syndrome
- 3H. Explain the causes and features of *hypocalcemic tetany*. What is *latent tetany*?
- 3I. List the actions of insulin on carbohydrate and lipid metabolism.
- 3J. Name the thyroid function tests. How are they affected in hypothyroidism and hyperthyroidism?
- 3K. Outline the process of sexual differentiation in fetal life. Add a note on *pseudohermaphroditism*.

- 3L. Explain the ovarian changes during a normal menstrual cycle. How are they regulated?
- 3M. Name the different visual field defects caused by lesions to the visual pathway. Explain the basis of each defect. What is '*macular sparing*'?
- 3N. Name the ear ossicles. Mention their role in hearing.
- 3O. Give the physiological basis for the following:
- i) Stimulus intensity discrimination during sensory perception
 - ii) Sound pitch discrimination by the cochlea

(4 marks × 15 = 60 marks)



MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – SEPTEMBER 2015

SUBJECT: PHYSIOLOGY– PAPER II (ESSAY)

Saturday, September 12, 2015

Time: 10:20 – 13:00 Hrs.

Max. Marks: 80

- ✍ All questions are compulsory. Write brief, clear and legible answers.
✍ Illustrate the answers with diagrams and flow charts wherever appropriate.

✍ **Essay questions:**

1. Define GFR and give its normal value. Mention the factors affecting it. Explain any one factor. Explain any one method for estimating GFR.
(1+1+3+2+3 = 10 marks)
2. Describe the neural regulation of respiration. Add a note on periodic breathing.
(6+4 = 10 marks)

3. **Short Answer Questions:**

- 3A. Briefly explain the Micturition reflex.
- 3B. Draw a neat labelled diagram of ECG recorded from Lead II. Give two uses of ECG.
- 3C. Surfactant
- 3D. Write the functions of platelets.
- 3E. Haemophilia
- 3F. Classify the fluid compartments of body giving their normal values. Mention two methods to determine ECF.
- 3G. Mention the types of T- lymphocytes and their function.
- 3H. Digestion and absorption of Fats.
- 3I. List the properties of the cardiac muscle. Explain any one of them.
- 3J. Define Stroke Volume and Cardiac output giving their normal values. Mention the factors affecting cardiac output.
- 3K. Achalasia Cardia
- 3L. Give the pH and the constituents of gastric juice. Describe the cephalic phase of gastric juice secretion.
- 3M. Enumerate the cause and clinical features of hypovolemic shock and the physiological basis for its treatment.
- 3N. Describe the production and propagation of cardiac impulse.
- 3O. Defecation Reflex

(4+4+4+4+4+4+4+4+4+4+4+4+(2+2)+4+4 = 60 marks)

