

MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2014

SUBJECT: PHYSIOLOGY– PAPER I (ESSAY)

Friday, May 30, 2014

Time: 10:20 – 13:00 Hrs.

Maximum Marks: 80

✍ **Essay questions:**

1. Draw a labeled diagram of pyramidal tract. Describe the termination of this tract at brain stem and spinal levels. Explain in detail the features of hemiplegia.
(4+2+4 = 10 marks)
2. Describe the regulation of plasma glucose levels in fasting and fed states. Add a note on insulin-glucagon ratio in normal and insulin deficiency.
(10 marks)

3. Short answer questions:

- 3A. Explain the connections and functions of neocerebellum.
- 3B. Explain how *motor aphasia* is different from *sensory aphasia*. Give the cause for each.
- 3C. Tabulate any THREE differences in functions between Categorical (dominant) and Representational (non-dominant) hemispheres. Mention the basis of such classification.
- 3D. Draw labelled diagrams to show the pathways for fast pain and tactile impulses originating from the face.
- 3E. Mention how each of the following is produced:
 - i) Argyll Robertson pupil
 - ii) Right-sided homonymous hemianopia
 - iii) Deuteranomaly
 - iv) Presbyopia
- 3F. Explain the effects of middle ear pathology on hearing. How do you assess the hearing loss in this condition?
- 3G. Name the intraocular muscles. Explain the nerve supply and function of each muscle.
- 3H. Name any FOUR thyroid function tests. How are they affected in hyperthyroidism?
- 3I. Explain the regulation of secretion of aldosterone following hypovolemia.
- 3J. Explain the mechanism of ovulation. Name any TWO indicators of ovulation.
- 3K. Explain the physiological basis of any FOUR different contraceptive methods.
- 3L. Give the source and actions of *dihydrotestosterone*. Add a note on *male pseudohermaphroditism*.
- 3M. Explain the functions of dendrites of a multipolar neuron located in the anterior horn of spinal cord.
- 3N. Explain briefly the role of contractile filaments in skeletal muscle.
- 3O. Explain the following properties of visceral smooth muscle:
 - i) Plasticity
 - ii) Self-excitability

(4 marks × 15 = 60 marks)



MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2014

SUBJECT: PHYSIOLOGY– PAPER II (ESSAY)

Saturday, May 31, 2014

Time: 10:20 – 13:00 Hrs.

Max. Marks: 80

✍ Essays:

1. Describe the salient features and regulation of:
 - i) Coronary blood flow
 - ii) Renal blood flow
2. Describe the location and rôle of chemoreceptors that regulate respiration. Explain nonchemical influences on respiration.

(10 marks × 2 = 20 marks)

3. Short answer questions:

- 3A. Explain the cause and treatment of *erythroblastosis fetalis*.
- 3B. Name any TWO antigen presenting cells. Explain the physiological basis of vaccination.
- 3C. Explain how the following chemicals act as anticoagulants.
 - i) Oxalates
 - ii) Heparin
 - iii) Warfarin
 Mention clinical use of warfarin.
- 3D. Compare 'passive transport' with 'active transport'. Give examples for each
- 3E. Describe the renal tubular secretion of H^+ .
- 3F. Explain the voluntary micturition in adults.
- 3G. Explain the principle involved in using 'PAH clearance' to measure effective renal plasma flow.
- 3H. What protects gastric mucosa from the damaging effect of hydrochloric acid? Name any THREE factors that tend to disrupt this protection.
- 3I. Explain the digestion of dietary carbohydrates.
- 3J. Explain the pathology in *achalasia* and *gastro-esophageal reflux disease (GERD)*.
- 3K. List the differences between first and second heart sounds. Give the causes of third and fourth heart sounds.
- 3L. Give an account of effect of autonomic nerve stimulation on pacemaker tissue.
- 3M. With the help of a labeled diagram, explain the genesis of waves of ECG.
- 3N. List the features of hemorrhagic shock. How is this type of shock different from low-resistance (vasogenic) shock?
- 3O. Explain Haldane effect using carbon dioxide dissociation curves.

(4 marks × 15 = 60 marks)

