

MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2013

SUBJECT: PHYSIOLOGY– PAPER I (ESSAY)
(OLD REGULATION)

Friday, May 31, 2013

Time: 10:20 – 13:00 Hrs.

Maximum Marks: 40

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

1. Explain how muscle spindle activity helps in Voluntary movement. (10 marks)
2. Name the structures in the middle ear and describe their functions. (2+4 = 6 marks)
3. Name the second messengers and explain the role of anyone on hormonal actions. (3+3 = 6 marks)
- 4A. Explain the process of myelinogenesis. (3 marks)
- 4B. Describe the immunological test for pregnancy. (3 marks)
- 4C. Name the taste receptors and draw a labeled diagram of taste pathway. (3 marks)
- 4D. Define neuro endocrine reflex and describe anyone reflex with a suitable example. (1+2 = 3 marks)
- 4E. Mention the different neuromuscular blocking agents with an example for each. Briefly explain the action of any one. (3 marks)
- 4F. Describe the source and action of: i) Relaxin ii) Inhibin (1½+1½ = 3 marks)



MANIPAL UNIVERSITY**FIRST MBBS DEGREE EXAMINATION – MAY/ JUNE 2013****SUBJECT: PHYSIOLOGY– PAPER II (ESSAY)
(NEW REGULATION)**

Saturday, June 01, 2013

Time: 10:20 – 13:00 Hrs.

Max. Marks: 80

✍ Essay questions:

1. Describe in detail the mechanism and forces involved in normal and forced breathing. Explain the concept of lung compliance.
2. Describe the phases of gastric secretion. Add a note on the causes and principle of treatment of peptic ulcer disease.

(10×2 = 20 marks)

3. Short answer questions

- 3A. Explain briefly the mechanisms of *changes in heart rate* in each of the following conditions:
 - i) Following acute blood loss
 - ii) During raised intracranial tension
- 3B. Explain the 'Frank-Starling law' of the heart using appropriate graphs. Show therein the effects of change in myocardial contractility on the graphs.
- 3C. Explain the factors that alter the peripheral vascular resistance under physiological and pathological states.
- 3D. Name the different leads employed in clinical electrocardiography. Draw diagrams to show how the electrodes are connected in different lead systems.
- 3E. Explain the mechanism of changes in the coronary blood flow occurring:
 - i) In response to increased myocardial oxygen demand
 - ii) In different phases of cardiac cycle
- 3F. Tabulate any four differences between '*pre hepatic jaundice*' and '*post hepatic jaundice*'. Mention one cause of each type of jaundice.
- 3G. Explain the functions of plasma albumin.
- 3H. Explain the mechanism and significance of clot retraction.
- 3I. Draw a labelled diagram of the respiratory membrane. State Fick's law of diffusion. Explain the effect of partial pressure gradients on gas exchange.
- 3J. Define *anatomical dead space* and *physiological dead space*. Mention the effects of increased alveolar dead space on alveolar gas composition.
- 3K. Explain the role of the descending and ascending loops of Henle in renal function.
- 3L. Explain why clearance of creatinine is used as an index of renal function.
- 3M. Explain how blood flow through skin is regulated for the purpose of thermoregulation.
- 3N. List any three special features of renal circulation and mention the utility of any one.
- 3O. Draw a labeled diagram of defecation reflex.

(4×15 = 60 marks)



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✍ **Essay questions:**

1. Explain in detail the mechanisms by which sensory system codes for the attributes of a perceived stimulus.
2. Describe the role of hormones in calcium haemostasis. Add a note on effects of hypocalcemia.

(10×2 = 20 marks)

3. **Short answer questions:**

- 3A. Mention the causes and list the salient features of *hyperthyroidism*.
- 3B. Explain how corticotropin (ACTH) influences the adrenal steroidogenesis. Add a note on its mode of action and secretion.
- 3C. Name the posterior pituitary hormones. Mention the stimuli for secretion and list the actions of these hormones.
- 3D. Use a flow chart to illustrate the sequence of events leading to presynaptic inhibition.
- 3E. Define/explain 'muscle tone'. Explain its physiological basis and clinical importance.
- 3F. Explain the organization of ascending reticular activating system (ARAS). List its functions.
- 3G. Draw the path taken by impulses when a test subject identifies (by speech) a visual object.
- 3H. Draw and label parts of organ of Corti.
- 3I. Name the receptors for colour vision and the specific location of these receptors. Classify colour blindness.
- 3J. Outline the drainage of aqueous humor. Add a note on *closed-angle glaucoma*.
- 3K. Explain the role of sarco-tubular system in muscles.
- 3L. Explain the role of voltage-gated channels in the generation of nerve action potential.
- 3M. Write briefly on sex differentiation in fetal life.
- 3N. Mention the role of sertoli cell in male reproductive function. Add a note on its regulation.
- 3O. Explain mechanism of: i) Menstrual bleeding ii) Erection of penis

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