

MANIPAL UNIVERSITY
FIRST MBBS DEGREE EXAMINATION – AUGUST 2013

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

Friday, August 16, 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. Name the cells of the islets of Langerhan's and mention the hormones produced by them. Describe the actions of hypoglycemic hormone. Add a note on diabetes mellitus.
(2+6+2 = 10 marks)

2. Enumerate the functions of hypothalamus. Explain any one of it.
(3+3 = 6 marks)

3. Describe with the help of a labeled diagram the visual pathway. Write a note on homonymous hemianopia and macular sparing.
(4+2 = 6 marks)

4A. Define Wallerian and retrograde degeneration. Explain how nerve regeneration occurs after it is cut.
(1+2 = 3 marks)

4B. Name the indicators of ovulation. What is the importance of knowing ovulation time?
(3 marks)

4C. Write briefly on motor cortex.
(3 marks)

4D. Traveling wave theory.
(3 marks)

4E. Define EEG. What are the normal waves? What is alpha block?
(1+1+1 = 3 marks)

4F. Describe the endocrine functions of testis.
(3 marks)



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1. Draw neat labelled diagrams of a normal electrocardiogram recorded from limb lead II and the corresponding cardiac electrical events occurring in the heart. Give the normal values for different events in the normal ECG. Add a note on the advantages of chest leads. Add a note on conduction blocks.
(3+4+1+2 = 10 marks)
2. Discuss the process of erythropoiesis with the help of suitable diagrams. Add a note on nutritional deficiency anemias.
(4+2 = 6 marks)
3. With the help of suitable labelled diagram explain neural regulation of respiration.
(6 marks)
- 4A. With the help of a neat labelled diagram of the cystometrogram, explain micturition reflex.
(3 marks)
- 4B. With the help of a flow chart, discuss briefly the role of Juxta Glomerular apparatus.
(3 marks)
- 4C. Briefly discuss Bohr effect.
(3 marks)
- 4D. Enumerate the events occurring in second stage of deglutition.
(3 marks)
- 4E. Discuss briefly the hormonal regulation of gastric acid secretion.
(3 marks)
- 4F. Enumerate three special features of coronary circulation. Briefly explain any one.
(1½+1½ = 3 marks)



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Time: 10:20 – 13:00 Hrs.

Maximum Marks: 80

✍ **Essay:**

1. Describe the connections and functions of Cerebellum. Explain any three manifestations of lesion of left cerebellum.

(4+3+3 = 10 marks)

2. Describe the hypoglycemic hormone with reference to its actions, regulation of secretion and the effects of its deficiency.

(4+2+4 = 10 marks)

3. Short answer questions:

- 3A. Explain the defect in presbyopia and specify the corrections needed.
3B. Explain the features and causes of Dwarfism and Cretinism.
3C. Name types of synaptic inhibitions. Explain any ONE.
3D. Name the stages of sleep and mention the EEG changes in each stage.
3E. Explain the auditory functions of middle ear.
3F. Explain the changes in uterus from day 1 to day 14 of a 28-day-menstrual cycle.
3G. Describe inverse stretch reflex.
3H. Draw the olfactory pathway from its origin to termination.
3I. Explain factors essential for and regulation of spermatogenesis.
3J. Explain the mode of stimulation and functional significance of *crista ampullaris* and *macula* of internal ear.
3K. Give the composition of oral contraceptive pills and explain their mechanism of action.
3L. Outline the histological changes of degeneration and regeneration in a peripheral nerve.
3M. Explain the functions of thyroid follicles and colloid.
3N. Draw a normal end plate potential and mention its properties.
3O. Explain the role of vitamin D in calcium homeostasis.

(4×15 = 60 marks)



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Max. Marks: 80

✍ Essays:

1. Describe the salient features and regulation of coronary blood flow. Add a note on the principle of treatment of angina pectoris.
2. Describe the location and role of neural centers that regulate respiration. Explain how hypoxia and hypercapnia influence respiration.

(10×2 = 20 marks)

3. Short answer questions:

- 3A. Explain the cause and treatment of pernicious anemia.
- 3B. Name any THREE specific locations where macrophages are located. Explain the functions of tissue macrophages.
- 3C. Name the commonly used *in vivo* and *in vitro* anticoagulants. Outline the mechanism of action of each.
- 3D. Compare and contrast the mechanism of 'facilitated diffusion' with that of 'active transport'.
- 3E. Describe the renal reabsorption of glucose.
- 3F. Explain the importance of *counter-current mechanism* in renal function.
- 3G. Explain the principle involved in using 'creatinine clearance' to assess GFR.
- 3H. What constitutes gastric mucosal barrier? Explain the causes of peptic ulcer.
- 3I. Explain the functions of colon.
- 3J. Explain the esophageal phase of deglutition.
- 3K. List the differences between systemic circulation and pulmonary circulation. Draw the pressure profile along the systemic circulation.
- 3L. Give an account of refractory period in cardiac muscle.
- 3M. With the help of a labelled diagram, explain the conducting system of the human heart.
- 3N. Define 'hemorrhagic shock'. List its features. Add a note on irreversible shock.
- 3O. Show, using a graph how different factors cause the *shift to the right* and *shift to the left* of oxygen dissociation curve. Explain *Bohr* effect.

(4×15 = 60 marks)

