

MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – JULY 2017

SUBJECT: PHYSIOLOGY – PAPER I (ESSAY)

Monday, July 17, 2017

Time: 10:20 – 13:00 Hrs.

Maximum Marks: 80

✍ **Answer ALL the questions.**

1. Describe the actions and control of secretion of glucocorticoids. Add a note on “Cushing Syndrome”.

(6+2+2 = 10 marks)

2. A 65 year old lady came to outpatient department with complaints of difficulty in initiating voluntary movements. On examination, there was absence of swinging of the arms during walking. She also had a mask like face, tremors at rest and a lead pipe type of rigidity.

2A. What is your probable diagnosis and where will be the site of lesion in the above case?

- 2B. Draw relevant neural circuits and describe the functions of the part of the brain that is affected in the above case.

((1+1) + 8 = 10 marks)

3. **Short answer questions:**

3A. What are the consequences of primary hypoparathyroidism?

3B. Describe the actions of glucagon.

3C. Write the steps involved in spermatogenesis. Mention any four factors influencing it.

3D. Write briefly on “milk ejection reflex”.

3E. Explain the hormonal changes occurring during follicular phase of a normal female menstrual cycle.

3F. Briefly describe cross bridge cycling during skeletal muscle contraction.

3G. Explain the factors affecting velocity of nerve impulse transmission.

3H. Write briefly on:

i) Refractory period in a neuron,

ii) Spatial summation of postsynaptic potentials.

3I. Write briefly on “Impedance matching” by middle ear.

3J. Outline the events involved in phototransduction in rods.

3K. Draw a labelled diagram of taste pathway. List the different taste sensations.

3L. Write briefly on the mechanism of:

i) Referred pain

ii) Modulation of pain by descending analgesic system.

3M. Write briefly on sensory and motor manifestations of “Brown-Sequard syndrome”.

3N. List the features of NREM sleep. Briefly describe a normal sleep cycle.

3O. List the functions of:

i) Blood-brain barrier

ii) Limbic system

(4 marks × 15 = 60 marks)



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SUBJECT: PHYSIOLOGY- PAPER II (ESSAY)

Tuesday, July 18, 2017

Time: 10:20 – 13:00 Hrs.

Max. Marks: 80

- ✍ **All questions are compulsory. Write brief, clear and legible answers.**
- ✍ **Illustrate your answers with diagrams and flow charts wherever appropriate.**
1. A 40 year old patient admitted to the casualty with sudden onset of palpitation and sweating. On examination, his blood pressure was 170/100mmHg and pulse rate was 140/min. On investigations a tumor in the adrenal medulla was detected causing hypersecretion of hormones.
- 1A. Explain the basis for findings seen in this patient.
- 1B. Define hypertension. List two other causes for secondary hypertension.
- 1C. Explain the role of baroreceptors in arterial blood pressure regulation in a healthy individual.
(3+2+5 = 10 marks)
2. Describe the role of platelets in hemostasis. Write the principle of two tests to assess platelet function. Add a note on von Willebrand disease.
(6+2+2 = 10 marks)
3. **Short answer questions:**
- 3A. Explain the factors that affect myocardial contractility and influence cardiac output.
- 3B. Explain the property of autorhythmicity in the heart. Mention the influence of autonomic nerves on this property.
- 3C. Compare systemic circulation with pulmonary circulation with respect to:
- i) Blood flow
 - ii) Pressure profile
 - iii) Vascular resistance
 - iv) Capillary dynamics
- 3D. Explain the role of peripheral chemoreceptors in regulation of respiration.
- 3E. Explain the role of surfactant in lungs.
- 3F. Compare and contrast anemic hypoxia with hypoxic hypoxia.
- 3G. Draw a labeled diagram of oxygen hemoglobin dissociation curve. Add a note on P₅₀ value.
- 3H. Draw a labeled diagram of nerve supply to salivary glands. What is the effect of parasympathetic and sympathetic stimulation on salivary secretion?
- 3I. Explain the role of bile salts in digestion and absorption of fat.
- 3J. Explain the pharyngeal stage of deglutition.

3K. Explain the role of following gastro-intestinal hormones:

i) Cholecystokinin

ii) gastrin

3L. List the thermoregulatory changes in the body when exposed to hot climate. Explain the pathogenesis of fever.

3M. Explain autoregulation of GFR.

3N. Explain why the loops of Henle are called counter current multipliers.

3O. Explain the cause and clinical features of erythroblastosis fetalis.

(4 marks × 15 = 60 marks)

