

Question Paper

Exam Date & Time: 04-Mar-2019 (02:00 PM - 04:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)
MBBS PHASE - I STAGE - I DEGREE EXAMINATION - MARCH
2019

Monday, March 04, 2019

Physiology [M1PHY]

PHYSIOLOGY - PART - II (ESSAY)

Section Duration: 120 mins

Max. marks : 60

Answer all the questions

Draw diagrams wherever appropriate

1. Mr. Donald, a 48-year-old banker visited a cardiologist at a city hospital with complaints of occasional chest pain and tiredness since past few days. On examination, Donald's blood pressure was found to be 160/98 mm Hg. His electrocardiogram (ECG) revealed larger QRS complexes and depressed ST segments. Donald was prescribed few medicines and asked to come back for a review after a fortnight.
 - 1A. Mention the causes for the ECG changes observed in Donald.
 - 1B. Draw a labeled diagram of a normal ECG recorded from limb lead II and mention the causes for the different waves in it.

(2+3 = 5 marks)

- 2A. Give physiological basis for the following:
 - i. Hematocrit of venous blood is normally 3% greater than that of the arterial blood.
 - ii. Chemoreceptors are not stimulated in CO poisoning.

(1+1 = 2 marks)
- 2B. Draw a neat labelled diagram of spirogram showing various lung volumes.

(3 marks)

- 3A. Explain the pathway of blood coagulation initiated by tissue factor released from the damaged tissues.
- 3B. If the blood groups of parents are 'AB' and 'O', what are the possible blood groups of their children?

(3+2 = 5 marks)

4. In the form of a flow chart describe the steps involved in neuromuscular transmission in skeletal muscles. Mention any two differences between skeletal and smooth muscle contractions.

(3+2 = 5 marks)

5. Give the physiological basis for the following:

- 5A. Increased systolic blood pressure in hyperthyroidism.
- 5B. Myxedema in hypothyroidism.
- 5C. Hyperkalemia during adrenal insufficiency.
- 5D. Hyperpigmentation of gums in Addison disease.
- 5E. Catecholamines increase force of contraction of the heart.

(5 marks)

6. Explain the phases of ovarian cycle. Draw the graph showing the hormonal control of ovarian cycle.

(3+2 = 5 marks)

7. Dr. Maria was preparing lunch for her 12-year-old son John, who was engrossed in reading a story book. He was distracted by the sounds of the utensils and aroma of food coming from the kitchen. He rushed to the kitchen and told his mother that he was feeling a mild burning sensation in his stomach and would like to have lunch immediately. Dr. Maria explained to John that the mild burning sensation he felt was due to acid secreted in his stomach.

7A. From the above scenario, mention which phase of acid secretion occurred in John's stomach.

7B. Explain the mechanism of acid secretion in the stomach, with the help of a labeled diagram.

(1+4 = 5 marks)

8. Describe the micturition reflex in the form of a flow chart.

(5 marks)

9A. Name the reflex that helps near objects to be clearly focused on the retina. Enumerate the changes that occur during this reflex.

(2 marks)

9B. Write physiological basis for the following:

- i) Visual acuity is greatest in fovea centralis.
- ii) Lesion in the optic chiasm causes bitemporal hemianopia.
- iii) Myopia is corrected by using biconcave lens.

(1+1+1 = 3 marks)

10A. Mention the two ways by which intensity of stimulus is discriminated.

10B. Draw a neat diagram of dorsal column pathway. Mention any two sensations carried by it.
(2+4 = 6 marks)

11A. Mention any four functions of thalamus.

11B. List any FOUR clinical features of cerebellar damage.
(2+2 = 4 marks)

12A. Draw a neat labelled diagram of nerve action potential.

12B. Mention any two differences between simple diffusion and facilitated diffusion.
(3+2 = 5 marks)

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