

Question Paper

Exam Date & Time: 03-Sep-2019 (10:00 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)

MBBS PHASE - I STAGE - I DEGREE EXAMINATION - AUGUST/SEPTEMBER 2019

Tuesday, September 03, 2019

Physiology [M1PHY]

PHYSIOLOGY - PART - II (ESSAY)

Section Duration: 120 mins

Max. marks : 60

Answer all the questions

Draw diagrams wherever appropriate

1. A 28 year old soldier was injured in the war. He was brought to the military hospital with a severely injured left leg. He was then operated, and his left leg was amputated below the knee. Few weeks after the surgery, the soldier reported severe pain from his left foot that had been amputated. He asked his surgeon about his repeated pain experience in his missing limb. The doctor tried to explain the cause for the same.
 - 1A. Name the phenomenon in the above case and describe its physiological basis.
 - 1B. Draw a neat labeled diagram of the pain pathway.

(2+3 = 5 marks)

2. Give physiological basis for the following:
 - 2A. Poor clot retraction in thrombocytopenia.
 - 2B. Kernicterus in haemolytic disease of the newborn.
 - 2C. Polycythemia in individuals living at high altitude.
 - 2D. RBC count is more in males compared to females.
 - 2E. Tingling and numbness in the extremities observed in Vitamin B₁₂ deficiency.

(5x1 = 5 marks)

- 3A. Write two differences between simple diffusion and facilitated diffusion.

(2 marks)
- 3B. Describe the changes occurring in the neuron during Wallerian degeneration.

(3 marks)

4. Explain the mechanism of contraction and relaxation in skeletal muscle, with the help of a flow chart.

(5 marks)

- 5A. Describe the role of peripheral chemoreceptors in the regulation of respiration.

(3 marks)
- 5B. Mention two functions of surfactant.

(2 marks)

6. Give physiological basis for the following:
- 6A. Left ventricular coronary blood flow is reduced during systole.
- 6B. Metabolic theory of autoregulation.
- 6C. Tachycardia associated with fever.
- 6D. Aortic stenosis produces murmurs.
- 6E. Sinus arrhythmia.
- (5x1 = 5 marks)
- 7A. Explain the regulation of gastric juice secretion during gastric phase.
- (3 marks)
- 7B. List FOUR functions of gall bladder.
- (2 marks)
8. Ms. Han, a 43-year-old woman visited the outpatient department with complaints of weight gain and increased facial hair over the past 6 months. Clinical examination revealed signs of easy bruisability, thinning of the skin, abdominal striae and hypertension. Her laboratory examination revealed abnormally low plasma ACTH level. Adrenal CT scan revealed bilateral adrenal masses. Histological examination revealed adrenal adenoma without malignant features.
- 8A. Name the endocrine disorder in Ms. Han and mention its cause.
- 8B. Mention the source of the hormone involved in the above case.
- 8C. Give the physiological basis for abdominal striae in Ms. Han
- 8D. What is the possible cause for low plasma ACTH level in Ms. Han?
- (2+1+1+1 = 5 marks)
- 9A. Mention three differences between types of nephrons.
- (3 marks)
- 9B. Name the hormone that is involved in Na^+ reabsorption in the kidneys. In which part of the renal tubules does it act?
- (2 marks)
- 10A. Explain ovarian changes during a normal menstrual cycle.
- (3 marks)
- 10B. With the help of a flow chart, explain the hormonal regulation of testicular function.
- (2 marks)
- 11A. Tabulate three differences between REM and NREM sleep.
- (3 marks)
- 11B. Define 'spinal shock'. Give the basis for it.
- (2 marks)
- 12A. Describe the process of impedance matching in the ear.
- (3 marks)
- 12B. Draw a labelled diagram for direct and indirect light reflex.
- (2 marks)
