

MANIPAL ACADEMY OF HIGHER EDUCATION**MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)****MBBS PHASE – I STAGE – I DEGREE EXAMINATION – NOVEMBER 2020****SUBJECT: PHYSIOLOGY - PART - II (ESSAY)**

Tuesday, November 03, 2020

Duration : 120 minutes

Max. marks : 60

- ✓ **Answer all the questions**
- ✓ **Draw diagrams wherever appropriate**

1. A 20 year old first year medical student was getting late for his physiology practical class. So, he ran up the stairs to go to the laboratory, which was on 4th floor of the college building. On reaching the lab his friends requested him to volunteer for recording blood pressure (BP). His BP was found to be 140/80 mm Hg. After 10 min again his blood pressure was checked which was 120/80 mm Hg.

1A. Calculate mean arterial pressure of the student from the value of the BP recorded as soon as he reached the classroom.

1B. With the help of a flow chart explain in detail the reflex mechanism which restored his BP back to normal.

(2+5 = 7 marks)

2. Draw a neat-labeled diagram of a multipolar neuron and give one function each of any three parts labeled.

(5 marks)

3. Describe the events taking place during excitation-contraction coupling in skeletal muscle.

(5 marks)

- 4A. Draw and label the pathway which carries fine touch sensation, from the right foot of an individual.**
(4 marks)
- 4B. Describe how spinocerebellum controls the ongoing execution of limb movement**
(4 marks)
- 5. Write the physiological basis for the following:**
- 5A. Weight loss in hyperthyroidism**
 - 5B. Constipation in hypothyroidism**
 - 5C. Deficiency of IGF-I causes dwarfism**
 - 5D. Hypertension in Conn's syndrome**
 - 5E. Hyperkalemia in adrenal insufficiency**
(5x1 = 5 marks)
- 6. Draw a neat labelled diagram of the visual pathway. Indicate the location of the following lesions and name the type of visual field defect produced by them**
- 6A. Lesion at left optic tract**
 - 6B. Lesion at optic chiasma**
(3+2 = 5 marks)
- 7. Write the physiological basis for the following:**
- 7A. Increased rate of respiration when arterial PO₂ level decreases**
 - 7B. Central chemoreceptors are not stimulated in acidosis**
 - 7C. Packed cell volume of venous blood is 3% more than arterial blood**
 - 7D. Transection at lower end of medulla stops respiration**
 - 7E. Cyanosis is seen in hypoxic hypoxia**
(5x1 = 5 marks)
- 8. Describe micturition reflex in the form of flow chart.**
(5 marks)

9. A 20-year-old girl visited a physician with complaints of fatigue, loss of stamina, heavy and prolonged monthly menstrual flow from past two years. On examination, doctor observed that her conjunctiva was pale, nails were dry and pulse rate was increased. Her laboratory findings showed:

RBC count	:	2 million cells/mm ³ of blood
PCV	:	15%
Hemoglobin	:	5 g%
Serum iron	:	Less than normal

- 9A. Calculate the mean corpuscular volume (MCV) and mean corpuscular hemoglobin (MCH) from the given data. Comment on the values obtained.
- 9B. Which morphological type of anemia is observed in the above case?
- 9C. What is the cause for this type of anemia based on lab findings?

(3+1+1 = 5 marks)

- 10A. List four causes for male pseudo-hermaphroditism. (2 marks)

- 10B. Explain the endometrial changes during a normal menstrual cycle. (3 marks)

11. Describe the regulation of gastric juice secretion during gastric phase. (5 marks)

