Question Paper

Exam Date & Time: 20-Mar-2023 10:20 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST PROFESSIONAL YEAR MBBS DEGREE EXAMINATION - MARCH 2023
SUBJECT: PHYSIOLOGY - PAPER I
(CBME BATCH – REPEATERS)

Marks: 80 Duration: 160 mins.

Answer all the questions.

Descriptive Questions:

1. A 4-year-old child was brought to the emergency room with bleeding from the nose for 2 hrs. The mother gives a history that the child had similar episodes in the past, but the bleeding used to stop spontaneously upon applying pressure. She gives no history of nose-picking in the child. The ENT consultant packed the nose with gauze to stop the bleeding and asked for investigations, whose results were as follows. RBC: 5 million cells/cumm of blood, Hemoglobin: 12 g%, WBC: 5000 cells/cumm of blood, Platelet count: 2.4 lakh cells/ cumm of blood, Bleeding time: 4 minutes, Clotting time of 10 minutes.

1A) Mention two probable causes for the above presentation. (2)
1B) Define Hemostasis. (1)
1C) List the steps of Hemostasis. (2)
1D) Describe the physiological process facilitated by nasal packing by the consultant. (5)

2. A 50-year-old female yoga instructor by profession, complains of giddiness while getting up from the bed in the morning for 1 week, she is being health conscious undergoes regular medical health checkups, and was found to be normal 2 months back. Clinical examination revealed, No sign of pallor, Icterus, cyanosis, clubbing, lymphadenopathy, or edema. Pulse: 80 beats per minute, regular, Blood Pressure found to be 110/80 mmHg in the supine position and 90/80 mmHg Immediately on standing. Systemic examination was found to be clinically normal.

2A) Name the probable cause for the above presentation. (1)
2B) Define Blood pressure. (1)
2C) Explain the term Systolic, Diastolic, and Mean Arterial Pressure & give their normal range. (3)
2D) Describe the mechanism involved in regulating blood pressure in the above scenario. (5)

3. **Short Notes:**

3A) Define Homeostasis and describe the positive feedback mechanism citing an example. (1+3 = 4)
3B) Describe the process by which glucose is reabsorbed in our body. (4)

3C) A 25-year-old farmer, who works in his field barefoot, complains of loss of weight and fatigue from 2 months. On investigation RBC count was 4 million cells/cumm of blood, Hemoglobin: 7.6 g%, Pulse: 100 beats/min high in volume and collapsing in nature. MCV: 70fl, MCH:19pg, MCHC: 26%, Stool examination revealed hookworm infestation.

i) Describe the microscopic blood picture in this individual with a neat diagram.

ii) What are the treatment options available for this individual?

(3+1 = 4)

3D) Describe the process of Excitation contraction coupling in a skeletal muscle. (4)

3E) A 14-year-old female complains of fatigue as the day progresses, an x-ray reveals enlarged thymus, and a clinical examination revealed weakness in a group of small muscles. Symptoms subsided with a dose of Neostigmine injection.

i) What is the probable diagnosis in this patient?

ii) Explain the physiological basis of the disease.

(1+3 = 4)

3F) Explain the salient features of coronary circulation. (4)

3G) Describe the conducting system of the heart. (4)

3H) Explain the ionic basis of ventricular action potential with the help of labelled diagram. (4)

3I) Compare and contrast Obstructive and restrictive lung disease. (4)

3J) List the non-respiratory functions of the respiratory system. (4)

3K) Describe Oxygen hemoglobin dissociation curve and explain the importance of p50. (3+1 = 4)

3L) Explain the mechanism of decompression sickness and explain the physiological basis. (4)

3M) Discuss the autoregulation of renal blood flow. (4)

3N) Explain the concept of Renal Threshold and Renal Transport Maximum. (2+2 = 4)

3O) Define cystometry and discuss the normal cystometrogram. (1+3 = 4)

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Question Paper

Exam Date & Time: 22-Mar-2023 10:20 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST PROFESSIONAL YEAR MBBS DEGREE EXAMINATION - MARCH 2023
SUBJECT: PHYSIOLOGY - PAPER II
(CBME BATCH – REPEATERS)

Marks: 80 Duration: 160 mins.

Answer all the questions.

Essay questions:

1. A first year MBBS student, went home after his exams and noticed that his 70 years old grandfather was having involuntary repeated to and fro movements of his hands whenever he sat at rest. On careful observation he also found that his grandfather's limb muscles felt rigid when passively moved. He also had difficulty in getting up from the chair. He was informed that all these symptoms have appeared gradually over the last 6 months.

1A) What is the most probable diagnosis in this case? (1)

1B) Name the part of brain involved this condition and enumerate its components. (2)

1C) Describe the connections among them. (4)

1D) Describe the hyperkinetic features which appear due to lesions in them. (3)

2. A 35 year old female visited the endocrinologist with complaints of swelling in the neck and excessive sweating. She said that she lost almost 5 kgs despite an increase in her appetite over last 2-3 months and senses that her heart is beating very fast. She also feels anxious most of the times. On examination the doctor found her pulse to be 104 beats per minute, blood pressure-130/70 mmHg, fine tremors of hands.

2A) What may be most probable cause in this case? (1)

2B) Explain the basis of the tests you would suggest in such a case to confirm your diagnosis. (3)

2C) Describe the process of biosynthesis and storage of hormones involved in the case. (6)

3. **Short Answers:**

3A) John went for a 7-course meal in a five-star hotel, where they served soup in the beginning:

i) Explain the physiological basis of having soup as appetizer before meal.

ii) Describe the mechanism of receptive relaxation.

(1+3 = 4)

3B) Name the types of dietary fibers and explain their physiological importance. (2+2 = 4)

3C) Describe the mechanism of enterohepatic circulation of bile salts. (4)

3D) Compare and contrast Upper Motor Neuron and Lower Motor Neuron Lesion. (4)

3E) Explain with a neat, labelled diagram the pathway of fine touch from hand. (4)

3F) Explain the mechanism of feed-forward inhibition in cerebellar circuit. (4)

3G) Explain the features of Rapid eye movement sleep. (4)

3H) Explain the properties of sensitization and habituation in receptors. (2+2 = 4)

3I) Draw a neat, labelled diagram of visual pathway and interpret the visual defects that occur due to pituitary tumor. (2+2 = 4)

3J) Explain the role of rods when a person enters a dim lit room. (4)

3K) Explain the mechanism and importance of impedance matching. (3+1 = 4)

3L) Explain the cause and features of Cushing syndrome. (1+3 = 4)

3M) Describe the mechanism of action of Insulin. (4)

3N) Describe the uterine endometrial changes during menstrual cycle. (4)

3O) Explain milk ejection reflex. (4)

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