

(This paper consists of 2 pages)
First M.B.B.S. (Main) Examination (New Scheme)

February - 2021

PHYSIOLOGY

Paper- I

Time: Three Hours

Maximum Marks: 100

Attempt all questions in both sections
(Use separate answer book for each section)

Section-A

1. Fill in the blanks:

6 x 1 = 06

- a) In _____ the muscle weakness is caused by an autoimmune attack against one of the Ca^{+2} channels in the nerve endings at the neuromuscular junction.
- b) The deep reflexes become weak and pendular in _____ lesion.
- c) High circulating levels of progesterone and estrogens in pregnancy prevent _____ bleeding and cause amenorrhea.
- d) Cushing's disease is due to excessive levels of _____.
- e) Visual receptors are not found at _____ part of the eye.
- f) Glucose enters in the intestine and renal tubules by _____ transport.

2. Choose the correct option in the following multiple choice questions:

4 x 1 = 04

A) Flocculonodular lobe is directly connected to-

- a) Red nucleus
- b) Vestibular nucleus
- c) Dentate nucleus
- d) Inferior olivary nucleus

B) Capacitation of sperm takes place in-

- a) Seminiferous tubules
- b) Epididymis
- c) Vas deferens
- d) Uterus

C) Which of the following best describes a physiological difference between the contraction of smooth muscle compared with the contraction of cardiac muscle and skeletal muscle?

- a) Ca^{+2} Independent
- b) Does not require an action potential
- c) Requires more energy
- d) Shorter in duration

D) Neurotransmitter released at sympathetic preganglionic fibers-

- a) Epinephrine

- b) Nor epinephrine
- c) Acetyl choline
- d) Dopamine

3. A 45-year-old man visits a physician because of difficulties performing simple tasks that involve repetitive movements. The physician asks the patient to turn one hand upward and downward at a rapid pace. The man quickly loses all perception of the instantaneous position of the hand, which results in a series of delayed attempts and jumbled movements. Use this information to answer the following questions- 15

- a) This patient's neurological signs are most likely related to lesion within which part of the brain? Name the probable condition with its pathophysiology.
- b) What are the connections and functions of this part of the brain?
- c) What are the other characteristics of disease associated with dysfunction of this part.

4. Write short notes on (Any five):

5 x 2 = 10

- a) Dark adaptation
- b) Decerebrate rigidity
- c) Thalamic syndrome
- d) Sarcotubular system
- e) Impedance matching
- f) Passive transport

5. Explain briefly (Any three):

3 x 5 = 15

- a) Endogenous pain relief (Analgesia) system
- b) Female contraceptives
- c) Stretch reflex
- d) Composition and functions of cerebrospinal fluid

Section-B

6. Discuss the common causes of infertility in a couple and role of in-vitro fertilization (IVF) in managing a case of infertility. Describe the following changes during different phases of menstrual cycle along with a suitable diagram- 20

- a) Hormonal
- b) Uterine
- c) Ovarian
- d) Vaginal

7. What will happen and why (Any five):

5 x 2 = 10

- a) If circulating levels of free Thyroxine & Triiodothyronine decrease in infants.
- b) If LH surge in an ovulatory cycle is absent.
- c) If vascular blockage of the thalamus occurs.
- d) If Ciliary muscles get temporarily paralysed.
- e) To pupil in oculomotor nerve paralysis.
- f) To menstrual cycle in a breast-feeding lady.

8. Explain briefly (Any four):

4 x 5 = 20

- a) Suckling reflex.
- b) Mechanism of accommodation of eye.
- c) Functions of Insulin.
- d) Differentiate between action potential and receptor potential.
- e) Tests of pregnancy.