Date: 10-04-2023

RUHS

First Year MBBS Examination

I MBBS PHYSIOLOGY PAPER I

Time: 3 hours

Max Marks: 100

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

Section 1

1. Fill in the blanks: (6)
   a. Most accurate method to measure extracellular fluid volume (ECFV) is by using,_____
   b. The degenerative changes occurring in the distal segment of the axon are called,_____
   c. _____ part of the brain, first of all manifests the hypoglycemic symptoms.
   d. Mechanism of action of intrauterine contraceptive device (IUCD) is based on _____

e. Sensory aphasia is produced due to the lesion in _____ area of the cerebral hemisphere.
f. Short-sightedness can be corrected by using _____ glasses.

2. Choose the correct option in the following multiple choice questions: (4)
   a. The rod receptor potential differs from other sensory receptors because it is associated with a) Depolarization. b) Decreased negativity. c) Hyperpolarization. d) Either hyperpolarization or depolarization.
   b. Sertoli cells in the testis have receptors for a) LH. b) Inhibin. c) FSH. d) GnRH.
   c. Sweet taste is mediated by a) Guanylcyclase. b) Tyrosine kinase. c) Epithelial Na* chain. d) G protein gustducin.
   d. There is mid-cycle shift in the basal body temperature (BBT) after ovulation in women. This is caused by a) Progesterone. b) LH-peak. c) Oestradiol. d) FSH-peak.
3. A 2-year old male child with a chief complaint of failure to appropriately gain weight despite right adequate caloric intake, came to the paediatric OPD. On examination there was swelling in his right leg along with thickening of the left wrist and both the ankles. Later on

he was diagnosed to have rickets. Answer the following questions-

a. Describe synthesis of Vitamin D.
b. Describe pathophysiology of development of rickets.
c. Describe the role of Vitamin D in bone. (15)

4. Write short notes on (Any five): (10)
   a. Blood-testis barrier
   b. Renshaw cell inhibition
   c. Molecular motors
   d. Facilitated diffusion
   e. Neurotrophins
   f. Recruitment of motor units
5. Explain briefly (Any three): (15)
   a. Fight or flight reactions
   b. Role of calcium in smooth muscle contraction
   c. Physiological changes that occur in d different organ system due to ageing
   d. Genesis of resting membrane potential (RMP) (C-36)

Section 2

6. Describe the principal connections and functions of basal ganglia. Describe briefly about Parkinson's disease. Add a note on other dysfunctions of basal ganglia. (20)
7. Explain why (Any five): (10)

a. There is polyphagia in diabetes mellitus.
b. Genetic sex is determined entirely by the sperm.
c. Osteoporosis is common in women after menopause.
d. Digitalis is used in the treatment of heart failure.
e. A patient who lost his leg in an accident feels proprioceptive sensations and intolerable pain in the amputated limb that no longer exists.
f. Radiologist wears red goggles when in bright light.

8. Explain briefly (Any four): (20)
a. Neuromuscular blockers)
b. Role of hypothalamus in regulation of body temperature
c. Sodium potassium pump
d. Intercellular junctions
e. Ionic basis of different phases of action potential in nerve

***