

SS/MBBS-I/PHY-I/02-21

First Professional MBBS Examination

2021

(February)

PHYSIOLOGY

Paper-I

Full Marks: 100

Time: 3 hours

The figures in the margin indicate

full marks for the questions

Write the answers to the two Halves in separate books

Answer all questions

FIRST HALF

1. Describe the origin, course and termination of Corticospinal Tract with labelled diagram. What are the features of Pyramidal Tract lesion? What is Brown-Sequard Syndrome? [3 + 3 + 3 + 3 + 3 = 15]

2. Write short notes on the following : [5 × 4 = 20]

- (a) Secondary active transport
- (b) Excitation—Contraction coupling in skeletal muscle
- (c) Disturbances in cerebellar dysfunction in man
- (d) Refractive errors of eyes

3. (ATCOM) Enumerate and describe professional qualities of a physician. 5

4. For the following MCQ-type questions, write down the answers (a), (b), (c) or (d) against the questions in the answer booklet: [1 × 10 = 10]

(i) The mobility of cell is due to

- (a) actin
- (b) calmodulin
- (c) tropomyosin
- (d) microtubules

(ii) Rheobase is

- (a) the length of time a current is applied to produce a response
- (b) the weakest current strength which can excite a tissue
- (c) constant for any given excitable tissue
- (d) used to compare excitability of various tissues

(iii) The contractile unit of muscle is called

- (a) sarcolemma
- (b) sarcomere
- (c) sarcoplasm
- (d) sarcoplasmic reticulum

(iv) Chromatolysis is seen in

- (a) demyelination
- (b) multiple sclerosis
- (c) section of an axon
- (d) tubes dorsalis

(v) Which of the following hormones does not need a second messenger?

- (a) FSH
- (b) LH
- (c) Glucagon
- (d) Oestrogen

(vi) Calcium metabolism is mainly dependent on

- (a) calcitonin
- (b) parathormone
- (c) thyroxine
- (d) growth hormone

(vii) Spermatozoa mature in which of the following organs?

- (a) Epididymis
- (b) Vas-deferens
- (c) Rete-testes
- (d) Prostate

(viii) Ovulation coincide with

- (a) increased progesterone
- (b) GnRH release
- (c) LH surge
- (d) decreased oestrogen

(ix) Asteriognosis is due to lesion of

- (a) nucleus gracilis
- (b) nucleus cuneatus

- (c) spinoreticular tract
 - (d) spinothalamic tract
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- (x) The receptors in the semicircular canal respond to
 - (a) linear acceleration
 - (b) angular acceleration
 - (c) both linear and angular acceleration
 - (d) vertical acceleration

SECOND HALF

5. Enumerate the neurohormones released from hypothalamus for control of pituitary functions. What are the factors which contribute growth promotion after birth? Give the differences between pituitary dwarf and thyroid dwarf. Write a note on the effects of hypophysectomy.

[4 + 4 + 4 + 3 = 15]

6. Write short notes on the following :

[5 × 3 = 15]

- (a) Hormonal regulation of menstrual cycle
- (b) Hormones secreted by placenta
- (c) Growth promoting hormones

7. Explain briefly (physiological basis) :

[2 × 2 = 4]

- (a) Chances of pregnancy are less likely in regularly lactating mother
- (b) Lesion in Wernicke's area leads to word-deafness

8. Compare and contrast between the following :

[2 × 3 = 6]

- (a) Cerebellar and sensory ataxia

(b) Endocytosis and exocytosis

(c) Action and graded potential

9. A person comes to the clinic with complaints of passing large amounts of urine (polyuria), increased thirst (polydipsia) and increased appetite (polyphagia) for last few months. Despite having increased appetite, he has lost weight. Urine examination shows presence of glucose and both his fasting and postprandial blood glucose levels are high.

Discuss the pathophysiology leading to the clinical outcome. What are the complications that are likely to occur if the condition is not treated?

[6 + 4 = 10]

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