

**First Professional MBBS Degree Supplementary (SAY) Examinations October 2024
Physiology - Paper II****Time: 3 Hours****Total Marks: 100**

- Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers
- Indicate the question number correctly for the answer in the margin space
- Answer all parts of a single question together • Leave sufficient space between answers
- Draw table/diagrams/flow charts wherever necessary

1. Multiple Choice Questions**(1x20=20)**

The Answers to MCQ questions (Q.No. i to Q.No. xx) shall be written continuously on the first two writing sheets (ie Page No. 3 & 4) only

Question numbers i-v are case scenario-based questions:

A 70 year old male was admitted to hospital with chief complaints of right sided generalised weakness for 2 days. He is a known hypertensive for the past 10 years on irregular treatment. On examination his vitals were stable. He had signs of upper motor neuron lesion. His Computed tomography (CT) of brain revealed a massive haemorrhagic lesion at the level of internal capsule. Answer the following questions based on the given case scenario

- Upper motor neuron in Central Nervous System means
 - Axons of any neuron arising from the spinal cord
 - Motor neuron supplying the muscle
 - Motor neuron above level of the anterior horn cell
 - Motor neuron below level of the anterior horn cell
- Most commonly affected artery
 - Middle cerebral artery
 - Posterior cerebral artery
 - Anterior cerebral artery
 - Anterior spinal artery
- The major descending tract that brings about skilled voluntary movements
 - Rubro spinal tract
 - Tectospinal tract
 - Anterior corticospinal tract
 - Lateral corticospinal tract
- The following are signs of Upper Motor Neuron lesion (UMN) EXCEPT
 - Flaccidity of affected muscles
 - Spasticity of affected muscles
 - Exaggerated reflexes in the affected motor segments
 - Decreased strength of affected muscles
- Pyramid in medulla is formed by decussation of
 - Spinothalamic tract
 - Corticospinal tract
 - Spinocerebellar tract
 - Rubrospinal tract

For Questions vi-x there are two statements marked as - Assertion (A) and Reason (R). Mark your answer as per the options provided

- (A): Hyposecretion of thyroid hormone in children leads to cretinism
(R): Lack of iodine in mother causes thyroid gland hyposecretion in pregnancy
 - A is incorrect R is correct
 - Both A & R are correct but R is not reason for A
 - A is correct R is incorrect
 - Both A & R are correct and R is the reason for A
- (A): I band in sarcomere is isotropic to light
(R): Length of I band remains the same during muscle contraction
 - Both A & R are correct but R is not reason for A
 - Both A & R are correct and R is the reason for A
 - A is correct R is incorrect
 - A is incorrect R is correct
- (A): In myopia the image is formed in front of the retina
(R): The shorter eyeball can lead to convergence of light rays in front of retina
 - Both A & R are correct and R is the reason for A
 - Both A & R are correct but R is not reason for A
 - A is incorrect R is correct
 - A is correct R is incorrect
- (A): Pain due to the inflammation of appendix felt around the umbilicus is an example for referred pain
(R): One – way conduction is a property of synapse
 - Both A & R are correct and R is the reason for A
 - Both A & R are correct but R is not reason for A
 - A is correct R is incorrect
 - A is incorrect R is correct
- (A): Coagulation cascade is an example of negative feedback mechanism
(R): In negative feedback, increase in variable triggers the process which decrease the variable to homeostatic level
 - Both A & R are correct and R is the reason for A
 - Both A & R are correct but R is not reason for A
 - A is correct R is incorrect
 - A is incorrect R is correct

(PTO)

Question numbers xi-xv are multiple response type questions. Read the statements and mark the answers appropriately.

- xi. Signs of Parkinsonism in humans include
 1) Intention tremor 2) Hypokinesia 3) Cogwheel rigidity 4) Festinant gait
 a) 1, 2 and 3 b) 2, 3 and 4 c) 1, 3 and 4 d) 1, 2 and 4
- xii. Facilitated diffusion is a process in which
 1) Transport is along the concentration gradient 2) Saturation kinetics is observed
 3) Energy (ATP) is required 4) Co transport can occur
 a) 1, 2 and 3 b) 2, 3 and 4 c) 1, 3 and 4 d) 1, 2 and 4
- xiii. All of the following are effects of aging
 1) Increase in autoimmune disorders
 2) Increase in cardiac output
 3) Thickening and stiffening of the media of large arteries
 4) Decrease in muscle mass and contractile force
 a) 1, 2 and 3 b) 2, 3 and 4 c) 1, 3 and 4 d) 1, 2 and 4
- xiv. The hormone released from anterior pituitary is
 1) Follicle-stimulating hormone 2) Prolactin 3) Growth hormone 4) Vasopressin
 a) 1, 2 and 3 b) 2, 3 and 4 c) 1, 3 and 4 d) 1, 2 and 4
- xv. The sensation carried by dorsal column are
 1) Pain 2) Vibration 3) Fine touch 4) Proprioception
 a) 1, 2 and 3 b) 2, 3 and 4 c) 1, 3 and 4 d) 1, 2 and 4

Questions xvi-xx are single response type questions

- xvi. Impairment of moral and social senses and flight of ideas occur in
 a) Temporal lobe lesions b) Parietal lobe lesions
 c) Occipital lobe lesions d) Prefrontal lobe lesions
- xvii. The threshold for taste stimulation is lowest for
 a) Sweet b) Sour c) Salt d) Bitter
- xviii. A 27 year old married woman having regular menstrual cycles does not have her periods for past 10 weeks. The gynaecologist suggests her to go for a urine pregnancy test. The following hormone in urine of a pregnant woman forms the basis of pregnancy test
 a) Human chorionic gonadotropin b) Estrogen
 c) Inhibin d) Human chorionic somatomammotropin
- xix. Carpopedal spasm is a clinical feature of
 a) Acromegaly b) Tetany c) Cretinism d) Dwarfism
- xx. Contractile unit of the skeletal muscle is
 a) Sarcomere b) Sarcoplasm c) Sarcoplasmic reticulum d) Sarcolemma

Long essays

(2x10=20)

2. A 42-year-old female patient presented with hirsutism, purple striae on the skin, buffalo hump and visual field defect. Her serum cortisol was elevated.
 a) Name the most probable clinical condition
 b) Describe the regulation of cortisol
 c) What type of visual field defect occurs in this patient and why
 d) Describe the physiological basis for the buffalo hump and purple striae. (1+2+3+4)
3. Draw and label the auditory pathway showing the receptors and the different synapses. Describe the different types of deafness with the tests used to differentiate them. (4+6)

Short Essays

(6x6=36)

4. Describe the mechanisms of Homeostasis with suitable examples
5. Describe the physiological basis for any three features of cerebellar disorders (2+2+2)
6. Discuss the hormones influencing growth and add a note on hyper secretion of growth hormone (3+3)
7. Explain the functions of testosterone during fetal period, puberty and in adults (2+2+2)
8. Describe the molecular basis of skeletal muscle contraction. Describe the functions of sarcotubular system (4+2)
9. Describe the production, circulation and functions of the cerebro-spinal fluid (1+2+3)

Short Answers

(6x4=24)

10. Describe the professional qualities of doctor
11. Write the mechanism of action of FOUR chemicals blocking the neuro muscular junction
12. Draw and label the dorsal column path way
13. Describe the physiological basis for phantom limb pain
14. Describe the physiological basis for menopause
15. Describe the waves and uses of Electro Encephalogram (EEG)
