001/22

The West Bengal University of Health Sciences MBBS 1st Professional Examination (New Regulation), February March 2022

Subject: Physiology Paper : II Full Marks: 100

Time: 3 hours

Attempt all questions. The figures in the margin indicate full marks.

- a) A 49 year old woman was brought to the Emergency department 2 hours after the onset of hemiplegia and aphasia during a transatlantic flight. Examination revealed evidence of acute ischemic stroke. Additional diagnostic studies were performed.
 - i) Define Aphasia
 - ii) Describe briefly the different forms of Aphasia.
 - iii) Differentiate between features of Upper and lower motor neuron lesion.
 - iv) Describe briefly the different forms of memory and the areas of the brain associated with them.
 - v) Add a note on synaptic plasticity.

1+4+3+5+2

- b) With the help of a diagram discuss in brief the juxta-glomerular apparatus. Enumerate the important regulators of rennin secretion. Describe the mechanism of formation of anigiotensin II and its physiological effects.
 2+3+3+3+4
- a) Draw a diagram of visual pathway. Enumerate the effects of lesions at different levels of visual pathway. What are the layers of retina?
 - b) Describe the hypothalamic and peripheral control of Growth Hormone secretion. Add a note on Acromegaly and Gigantism.
 - c) Describe the neurochemical mechanisms promoting sleep and arousal. Enumerate the stages of Sleep. Add a note on circadian rhythm.
 5+3+2
- 3. Write short notes on the following:

2x5

- a) Gate control theory of pain.
- b) Physiology of lactation.
- Explain the following statements:

5x4

- a) Vasa recta is essential for concentration of urine.
- Thalamic nuclear activity is the source of EEG waves.
- c) Renal hypotension triggers rennin activity.
- d) Dissociated sensory loss occurs in Syringomyelia.
- e) Smell sensation is lost in COVID.
- Choose the correct option of each of the following:

10x1

- i) All are true regarding glomerular filtration except,
 - a) The rate is 7.5 liter per hour.
 - The capillary hydrostatic pressure gradually decreases along the glomerular capillary plexus.
 - c) The capillary oncotic pressure gradually increases along the glomerular capillary plexus.
 - d) The substances having molecular weight 2000 are freely filtered.

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- ii) Structure of brain involved in emotion:
 - a) Neocortex.
 - b) Thalamus.
 - c) Limbic system.
 - d) Basal ganglia.
- iii) Ability to appreciate the shape and size of an object placed in the hand is lost in lesion of
 - a) Tractus Gracilis.
 - b) Tractus Cuneatus.
 - c) Spinoreticular Tract.
 - d) Anterior spinothalamic tract.
- iv) The hormone AVP causes,
 - a) Fall in systemic arterial blood pressure.
 - b) Decrease water permeability of cortical collecting tubule.
 - c) Increase urea permeability in inner medullary collecting duct (IMCD).
 - d) Stimulate Na Cl symport (NCC).
- v) Insulin increases the entry of glucose into:
 - a) All tissues.
 - b) The mucosa of the small intestine.
 - c) Most neurons in the cerebral cortex.
 - d) Skeletal muscle.
- vi) The neurotransmitter at the postganglionic sympathetic neuron is :
 - a) Acetylcholine.
 - b) Noradrenaline.
 - c) Adrenaline.
 - d) Dopamine
- vii) Secretion of prolactin is affected by:
 - a) GnRH analogue.
 - b) Dopamine.
 - c) Serotonin.
 - d) FSH.
- viii) The NREM sleep is characterized by all except:
 - a) One hour duration.
 - b) Sleep spindles are seen in EEG waves.
 - c) Profound hypotonia.
 - d) It has 4(four) stages.
 - ix) Bitemporal Hemianopia is due to:
 - a) Injury to the temporal lobes bilaterally.
 - b) Disruption of the optic nerve fibres arising from the temporal retina.
 - c) Damage to the optic chiasma.
 - d) Loss of vision in the Midline half aspect.
 - x) Which set of hormones have nuclear receptor:
 - a) Estrogen, thyroxin, glucagon.
 - b) Estrogen, TSH, GnRH.
 - c) Thyroxin, retinoic acid, LH.
 - d) Estrogen, cortisol, testosterone.