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**The West Bengal University of Health Sciences  
MBBS 1<sup>st</sup> Professional Examination (New Regulation),  
October-November 2025**

**Subject: Physiology  
Paper: II**

**Full Marks: 100  
Time: 3 hours**

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

1. A 60 year old male, reported difficulty in initiating any motor activity like walking, brushing his teeth etc. Doctors also noted that, while he is sitting, there was tremor in his hand and this tremor stopped while doing any activity. It was also noted that there is no change in facial expression along with change of emotion. On CNS examination, it was revealed there is hypertonia with Cog wheel rigidity, pill rolling tremor in his hand and festinant gait. Cerebellar, sensory, cortical and higher functions were normal. 1+6+4+4

- i) What is your provisional diagnosis?
- ii) Give the pathophysiological basis of this disease with diagram.
- iii) What is the physiological basis of hypokinesia(akinesia, bradykinesia, slow movement)?
- iv) What is the physiological basis of tremor?

**2. Explain the following statements:**

5×3

- i) Edema does not develop in Conn's syndrome.
- ii) Ovariectomy within 6 weeks may lead to abortion.
- iii) Rubbing or shaking an injured part reduces pain due to injury.
- iv) Actual renal threshold of glucose is less than the predicted value.
- v) Polyphagia occurs in diabetes mellitus.

**3. Short questions (applied aspect):**

4×5

- i) Creatinine clearance.
- ii) Body responses activated by exposure to hot climate.
- iii) Visual pathway with diagram and diseases associated with lesions at different level.
- iv) Regulation of fluid electrolyte balance in dehydration.

**4. Short notes:**

3×6

- i) Fetoplacental unit.
- ii) Cushing's syndrome.
- iii) Infertility.

**5. Write short notes on the following:**

4×5

- i) Organ of Corti.
- ii) Dorsal column of spinal cord.
- iii) Role of empathy in patient doctor relationship.
- iv) Countercurrent multiplier and exchanger.

**6. Choose the correct option among all of the following:**

12×1

- i) A patient of diabetic Keto-acidosis develops Kussmaul breathing caused due to:
  - a) Effect of metabolic acidosis on peripheral chemoreceptors.
  - b) Effect of metabolic acidosis on central chemoreceptors.
  - c) Diabetes induced autonomic neuropathy.
  - d) Diabetes induced depression of respiratory centre.

- ii) The most important role of light in vision:
- a) It converts cis form of retinal to a trans form.
  - b) It converts trans form of retinal to a cis form.
  - c) It converts opsin from 'on' state to 'off' state.
  - d) It leads to opening of cGMP gated ion channels.
- iii) A patient suffering from right cerebellar dysfunction, presents with all except:
- a) Intention tremor
  - b) Nystagmus
  - c) Left sided ataxia
  - d) Scanning speech
- iv) A 8 year old girl was brought to the OPD with complaints of excessive menstrual bleeding for the last two months. All are true except:
- a) The girl needs admission and urgent blood transfusion
  - b) Maternal history is important
  - c) MRI of the Brain may be necessary
  - d) Examination for axillary hairs and breast development is essential
- v) A 10 year old boy was brought by the concerned mother who describes how the boy throws his hands and legs while acting out his dream. During which phase of sleep does this occur?
- a) NREM 1 stage
  - b) NREM 2 stage
  - c) NREM 3 stage
  - d) REM stage
- vi) A Urinalysis report reads: Protein- trace, Casts-nil, Sugar +, Bile salts-nil, Bacteria +, Pus cell-2-4/hpf. Which of the following is the most appropriate next line of treatment?
- a) Urine for culture and sensitivity test should be done immediately.
  - b) Start antibiotics for Urinary tract infection.
  - c) Creatinine clearance tests should be performed.
  - d) A fasting morning sample for blood sugar estimation is required.
- vii) A middle-aged man complains of vertigo. Which of the following is not correct?
- a) Can be accompanied with nystagmus
  - b) Can occur in middle ear cavity diseases
  - c) Is a common symptom of cerebellar disease
  - d) Can occur with stroke
- viii) A newly married couple attended a Gynecology clinic seeking advice on contraception. The best method for them would be:
- a) Rhythm method
  - b) Coitus interruptus
  - c) Condoms
  - d) OC pills
- ix) Blood reports of a 54 year old male shows: TSH-100mIU/L (Normal: 0.5- 5 mIU/L), Total T3-0.1 ng/dl(70-200ng/dl), Total T4-0.01µg/dl(5-12 µg /dl). All of the following are true except:
- a) Thyroid hormone replacement must be started immediately.
  - b) There is a risk of heart failure in this patient.
  - c) Beta-blockers may be used during treatment of this patient.
  - d) A diagnosis of whether this is a patient of primary or secondary Hypothyroidism cannot be made from this report.
- x) A newborn baby was found to have ambiguous genitalia. Which of the following is true?
- a) The sex of the baby can not be declared immediately.
  - b) A history of maternal hormone intake is always present.
  - c) Congenital adrenal hyperplasia may be cause in male babies.
  - d) Most cases are true hermaphrodites.
- xi) A 55 year old man with chronic kidney disease develops diffuse bone pain and weakness and reveals severe osteoporosis in imaging. Most probable underlying pathophysiology is:
- a) Decreased calcitonin level
  - b) Secondary hyperparathyroidism
  - c) Decreased phosphate level in blood
  - d) Hypervitaminosis of Vit D
- xii) A young lady suffers from huge blood loss during child birth. She will have all the symptoms except:
- a) Lactation failure
  - b) Amenorrhea
  - c) Fatigue
  - d) Hypertension