



**All India Institute of Medical Sciences, Kalyani**  
**First Professional MBBS Examination 2022 (Batch-2021-22)**

**Time: 3 Hrs.**

**Physiology (Paper-II)**

**Marks: 100**

**INSTRUCTIONS:**

- Answer all questions.
- Illustrate your answers with well labelled diagram wherever necessary.
- Answer each section in a separate answer book.

**SECTION – A (50 MARKS)**

1. Describe the physiological functions and regulation of secretion of growth hormone. Write the pathophysiology of excessive secretion of growth hormone in child and adult. (3+3+4=10)
2. Enumerate hormones regulating blood calcium level. Describe the action of any one amongst them. (2+3=5)
3. Explain the mechanism of action of steroid hormones with the help of suitable diagram. (5)
4. Describe the counter current mechanism of kidney with suitable diagram. (5)
5. Explain the process of parturition with flowchart. (5)
6. Explain the role of juxtaglomerular apparatus in regulation of GFR with flow chart. (5)
7. Explain the milk ejection reflex with flow chart. (5)
8. Describe the hormonal changes during different stages of menstrual cycle. (5)
9. Explain the physiological basis of (5X1)
  - a) Polyphagia in diabetes mellitus
  - b) Increase in GFR after taking high protein diet
  - c) Though the fetus is foreign tissue for mother's body, Fetal graft is not rejected by mother's Immune system.
  - d) Sterility in cryptorchidism.
  - e) Capacitation of the spermatozoa

**SECTION – B (50 MARKS)**

1. Elderly patient brought to clinic with complaints of progressive inability to do fine movements using fingers and maintaining balance. On examination, there was hypertonia. Lead pipe rigidity was present. Gait was jerky as he walked into clinic. Resting tremors were present. (2+2+3+3=10)
- a) What is the likely diagnosis?
  - b) Which part of the CNS is affected in this disease?
  - c) What is the physiological basis of symptoms?
  - d) Describe the treatment.
2. Explain the visual pathways with suitable diagram (5)
3. Describe functions of the organ of Corti. (5)
4. a) Compare and contrast REM sleep and NREM sleep (2½)  
b) Draw a neat labelled diagram of Cortico-spinal tract (2½)
5. Describe in brief the cardiorespiratory changes during exercise. (5)
6. Describe the physiology of endogenous analgesia system. (5)
7. Describe the health benefits of yoga on various systems of the body. (5)
8. Explain the sequence of events involved in photo-transduction in photo-receptors using a flowchart. (5)
9. Explain Physiological basis of (5X1=5)
- a) Hypotonia in lower motor neuron lesion
  - b) Ptosis in Horner's syndrome
  - c) Cataract in diabetes mellitus
  - d) Anosmia with hypogonadism in Kallmann syndrome
  - f) Impedance matching