

**First Professional MBBS Degree Supplementary (SAY) Examinations
November 2025
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

(20x1=20)

The **MCQ** questions (Q.No. i to Q.No. xx) shall be answered **only in the OMR sheet provided at page No. 51** of the answer book (the inner portion of the back cover page (PART III)). Responses for MCQs marked in any other part/page of the answer book will not be valued. **For marking the correct responses use X mark only**

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

58-year-old female complains of progressive weight gain of 5 kg in one year, fatigue, slight memory loss, slow speech, dry skin, constipation and cold intolerance. On examination body temperature 96.8⁰ F, pulse is 58/min, BP 140/100mmHg. She is moderately obese and has puffy face with dry thick skin. The thyroid gland is slightly enlarged.

- i. Thyroid hormone is derived from
a) Thiamine b) Tryptophan c) Tyrosine d) Threonine
- ii. Thyroid hormone mainly effective at tissue level is
a) Free T3 b) Free T4 c) MIT d) DIT
- iii. Calcitonin is secreted by
a) Parathyroid b) Kidney c) Thymus d) Thyroid
- iv. Thyroid hormone binds to which receptor
a) Membrane b) Nuclear c) Cytoplasmic d) Mitochondria
- v. Clinical features not seen in hyperthyroidism
a) Bradycardia b) Increased systolic B.P c) Tremor d) Warm skin

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

- a) **Both A & R are correct and R is the reason for A** c) **A is correct R is incorrect**
- b) **Both A & R are correct but R is not reason for A** d) **A is incorrect R is correct**
- vi. **Assertion:** Hypokinetic features of Parkinson's disease are rigidity and tremor
Reason: Parkinson's disease is due to degeneration of nigrostriatal dopaminergic fibers
- vii. **Assertion:** Sarcotubular system is made up of a T system and a sarcoplasmic reticulum
Reason: Tropomyosin inhibits the interaction of myosin with actin
- viii. **Assertion:** Ataxia and dysmetria are the clinical features seen in cerebellar disease
Reason: Cerebellum is concerned with adjustments that make coordination easier
- ix. **Assertion:** Bone conduction is better than air conduction in middle ear infections
Reason: Tympanic reflex is the function of middle ear
- x. **Assertion:** Protrusion of lower jaw is seen in acromegaly
Reason: Hyper secretion of growth hormone in adults

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

- xi. Hormones contributing for the postnatal somatic growth are
1) Thyroid hormone 2) Growth hormone 3) Catecholamines 4) Androgens
a) 1, 2 and 3 are correct c) 1, 3 and 4 are correct
b) 2, 3 and 4 are correct d) 1, 2 and 4 are correct
- xii. Hyperglycemic hormones are
1) Insulin 2) Glucocorticoids 3) Glucagon 4) Growth hormone
a) 1, 2 and 3 are correct c) 1, 3 and 4 are correct
b) 2, 3 and 4 are correct d) 1, 2 and 4 are correct

- xiii. Cell adhesion molecules are
 1) Myosin 2) Integrins 3) Cadherin 4) Selectin
 a) 1, 2 and 3 are correct c) 1, 3 and 4 are correct
 b) 2, 3 and 4 are correct d) 1, 2 and 4 are correct
- xiv. Sensations carried by the spinothalamic tract are
 1) Crude touch 2) Pain 3) Vibration 4) Temperature
 a) 1, 2 and 3 are correct c) 1, 3 and 4 are correct
 b) 2, 3 and 4 are correct d) 1, 2 and 4 are correct
- xv. Higher mental functions are
 1) Language 2) Coordination 3) Learning 4) Memory
 a) 1, 2 and 3 are correct c) 1, 3 and 4 are correct
 b) 2, 3 and 4 are correct d) 1, 2 and 4 are correct

Questions xvi-xx are single response type questions

- xvi. FSH is produced by
 a) Corticotropes b) Somatotropes c) Gonadotropes d) Lactotropes
- xvii. Delta cells of pancreas produce
 a) Insulin b) Somatostatin c) Glucagon d) Pancreatin
- xviii. Sperms acquire motility in
 a) Testis b) Vas deferens c) Epididymis d) Seminal vesicle
- xix. Gamma motor neurons are mainly influenced by
 a) Reticulospinal tract b) Tectospinal tract c) Corticospinal tract d) Vestibulospinal tract
- xx. Rough endoplasmic reticulum is the site of synthesis of
 a) Cholesterol b) Carbohydrate c) Protein d) Mucopolysaccharides

Long essays

(2x10=20)

2. A 45-year-old female patient was presented with palpitations, loss of weight in spite of good appetite and intolerance to heat. On examination she had fine tremors, thyroid nodule and mild exophthalmos. Blood report showed decreased TSH and elevated T₃, T₄ levels
 a) Name the most probable clinical condition (1)
 b) Describe the actions of the affected hormone (5)
 c) Physiological basis for palpitation and exophthalmos in this patient (2+2)
3. Trace the pain pathway from (R) lower limb. Describe the analgesia system of the body (4+6)

Short Essays

(6x6=36)

4. Role of hypothalamus in feeding and satiety. Physiological basis for polyphagia in Diabetes Mellitus (3+3)
5. Draw and label the auditory pathway. Describe impedance matching (3+3)
6. Describe the excitation- contraction coupling in skeletal muscles
7. Describe the neuroendocrine reflex and physiological basis for onset of puberty (3+3)
8. Describe the actions and regulation of anti- diuretic hormone (4+2)
9. Describe the actions of estrogen in various tissues

Short Answers

(6x4=24)

10. Differentiate between REM and NREM sleep. Add a note on narcolepsy (2+2)
11. Physiological basis for phantom limb
12. Draw and label a muscle spindle and list its functions (2+2)
13. Physiological basis for rigidity in UMN lesions (3+1)
14. Describe the qualities of a good doctor patient relationship.
15. Functions of Serotoli cells
