

FIRST M.B.B.S. DEGREE EXAMINATION
Revised (Non-Semester) Regulations
Paper IV – PHYSIOLOGY INCLUDING BIOPHYSICS – II
Q. P. Code : 524054

Time : Three hours

Maximum: 100 Marks

Answer **ALL** questions.

Draw Suitable diagrams wherever necessary

I. Essay Questions :

(2 x 15 = 30)

1. Enumerate the descending tracts of spinal cord.
Describe in detail the pyramidal tracts.
Mention its functions and effects of lesion at different levels.
2. Define arterial blood pressure.
Describe the nervous regulation of arterial blood pressure.

II. Write Short notes on :

(10 x 5 = 50)

1. Surfactant.
2. Chloride Shift.
3. Artificial respiration.
4. Taste Pathway.
5. Effects of lesion in optic pathway.
6. Brown sequard syndrome.
7. Functions of Thalamus.
8. Pacemaker Potential.
9. Regulation of coronary circulation.
10. Neuromuscular transmission.

III. Short Answer Questions :

(10 x 2 = 20)

1. Define sarcomere. Mention normal length of sarcomere.
2. Myasthenia gravis.
3. Windkissel effect.
4. Phonocardiogram.
5. Haldane's effect.
6. VO₂ Max.
7. Babinski sign.
8. Alpha block.
9. Functions of Aqueous humor.
10. Rinne's Test.

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Answer **ALL** questions.

Draw Suitable diagrams wherever necessary

I. Essay Questions :

(2 x 15 = 30)

1. Name the functional divisions of the cerebellum.
Describe the structure, connections, and functions of cerebellum.
Mention two signs of cerebellar lesions.
2. Define cardiac cycle.
Describe in detail with the help of a diagram.
The mechanical changes during cardiac cycle. Add a note on heart sounds.

II. Write Short notes on :

(10 x 5 = 50)

1. Neuro-muscular junction.
2. Compare rem and nonrem sleep.
3. Triple response.
4. Describe formation, circulation and functions of cerebrospinal fluid (C.S.F.).
5. Functions of vestibular apparatus.
6. Explain 'Dark Adaptation'.
7. Organ of corti.
8. Describe decompression sickness.
9. Describe chemical control of respiration.
10. What is myasthenia gravis. Describe the biological basis of its treatment.

III. Short Answer Questions :

(10 x 2 = 20)

1. Explain the basic defect in astigmatism and its correction.
2. Draw a labelled diagram of arterial pulse and explain.
3. Draw a labelled diagram of pathways for taste.
4. Rigor mortis.
5. Phantom limb.
6. Oxygen debt.
7. What is Bohr's effect? What is its physiologic significance?
8. Draw a normal E.C.G. and label it.
9. Refractory period.
10. Define Terms: Chronaxie, Rheobase and utilization time.

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Answer **ALL** questions.

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I. Essay Questions :

(2 x 15 = 30)

1. Enumerate the ascending tracts in the spinal cord.
Describe the pathway for pain in detail. Add a note on referred pain.
2. Describe the neural regulation of respiration. Add a note on periodic breathing.

II. Write Short notes on :

(10 x 5 = 50)

1. Compliance of lungs.
2. Brown sequard syndrome.
3. Blood brain barrier.
4. Surfactant.
5. Chronaxie and rheobase.
6. Pupillary light. Reflexes.
7. Pace maker potentials.
8. Atrial natriuretic peptide.
9. Draw the optic pathway. Depict the lesions at various levels.
10. Peculiarities of pulmonary circulation.

III. Short Answer Questions :

(10 x 2 = 20)

1. Wernicke's aphasia.
2. Acetyl choline.
3. Parkinson's disease: Features.
4. Rapid – Eye movement sleep.
5. Anti – G. Suit.
6. Clinical significance of electro encephalo gram.
7. Chloride shift.
8. Jugular venous pulse.
9. Contents of middle ear.
10. Functions of placenta.

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Answer **ALL** questions.

Draw Suitable diagrams wherever necessary

I. Essay Questions :

(2 x 15 = 30)

1. What are the types of muscular exercise?
Discuss the various physiological changes occurring during and after exercise.
2. Elucidate how pressure vibrations in the air are perceived as sound.

II. Write Short notes on :

(10 x 5 = 50)

1. Kirchoff's law and Einthoven's law.
2. Excitation contraction coupling in cardiac muscle.
3. Triple response in skin.
4. Physiological dead space.
5. Dysbarism.
6. Causes of muscle tone.
7. Function of palaeostriatum.
8. Climbing, mossy and parallel fibres.
9. Control of appetite.
10. Induction of sleep.

III. Short Answer Questions :

(10 x 2 = 20)

1. Tracing of arterial pulse.
2. Reynold's number.
3. Pre load and after load in the heart.
4. Sneezing reflex.
5. Denervation hypersensitivity.
6. Reciprocal inhibition.
7. Consolidation of memory.
8. Formation of cerebrospinal fluid.
9. Gustatory receptors.
10. Dark adaptation.

[KX 503]

AUGUST 2010

Sub. Code : 4054

FIRST M.B.B.S. DEGREE EXAMINATION
Revised (Non-Semester) Regulations
Paper IV – PHYSIOLOGY INCLUDING BIOPHYSICS – II
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Time : Three hours

Maximum: 100 Marks

Answer **ALL** questions.

Draw Suitable diagrams wherever necessary

I. Essay Questions :

(2 x 15 = 30)

1. Discuss the short term and long term regulation of Arterial blood pressure.
Add a note on Neurogenic Hypertension.
2. With the help of a diagram, describe the auditory pathway.
Add a note on conduction deafness.

II. Write Short notes on :

(10 x 5 = 50)

1. Theories of Hearing.
2. Anterior spino thalamic tract.
3. Postural reflexes.
4. Aqueous humor.
5. Taste pathway.
6. Cerebral circulation.
7. Color vision.
8. CO₂ transport.
9. Chemo receptors.
10. Endothelins.

III. Short Answer Questions :

(10 x 2 = 20)

1. Broca's Area.
2. Spinal Animal.
3. SCUBA diving.
4. Cardiac Index.
5. Bohr's effect.
6. Inverse stretch reflex.
7. Respiratory distress syndrome.
8. Thalamic syndrome.
9. Unipolar limb leads.
10. Astigmatism.

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Time : Three hours

Maximum: 100 Marks

Answer **ALL** questions.

Draw Suitable diagrams wherever necessary

I. Essay Questions :

(2 x 15 = 30)

1. Define Cardiac output.
Discuss the factors regulating the cardiac output. Add a note on Fick's principle.
2. Trace the visual pathway and the effects of lesion at various points in the pathway.

II. Write Short notes on :

(10 x 5 = 50)

1. Normal ECG in Lead II.
2. Regulation of coronary blood flow.
3. Compliance of lung.
4. Carbon dioxide transport.
5. Dysbarism.
6. Functions of Thalamus.
7. REM sleep.
8. Decerebrate rigidity.
9. Taste pathway.
10. Theories of hearing.

III. Short Answer Questions :

(10 x 2 = 20)

1. State Frank Starling's law of the heart.
2. List short term regulation of blood pressure.
3. Intrapleural pressure.
4. State dead space and its normal value.
5. Define Histotoxic hypoxia with an example.
6. What is Bell – Megendie law?
7. Four functions of Reticular activating system.
8. Functions of prefrontal lobe.
9. What is Endo cochlear potential?
10. Delta waves in EEG.

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Time : Three hours

Maximum: 100 Marks

Answer **ALL** questions.

Draw Suitable diagrams wherever necessary

I. Essay Questions :

(2 x 10 = 20)

1. Name the functional Division of Cerebellum.
Describe the Structure, connections and functions of cerebellum.
Mention any two signs of cerebellar lesion.
2. Describe the structure and function of the conducting system of the Heart.
List the properties of cardiac muscle.

II. Write Short notes on :

(10 x 5 = 50)

1. Non respiratory functions of lung.
2. What is FRC? How will you measure FRC and its clinical Importance?
3. Artificial respiration.
4. Referred pain and its theories.
5. Special features of coronary circulation.
6. Colour Vision.
7. Taste pathway.
8. Explain Dark adaptation.
9. What is Myasthenia Gravis? Explain the biological basis of it's treatment.
10. Brown sequard syndrome.

III. Short Answer Questions :

(15 x 2 = 30)

1. Draw the diagram of alveocapillary membrane and write the thickness of it.
2. What is SCUBA?
3. Who discovered J receptors? What is its Physiological significance?
4. What are otolith organs?
5. What is alpha block?
6. Define Frank-Starling law.
7. What is Monroe Kellie Doctrine law?
8. What is Stereognosis? Where is its centre?
9. What are the functions of frontal lobe?
10. What are the mechanoreceptor? Give example.
11. What is summation? Mention its types
12. What are Cholinergic & Adrenergic receptors?
13. Draw the structure of rods & Cones.
14. What is the difference between the Spasticity and Rigidity.
15. Define histotoxic hypoxia.

FIRST M.B.B.S. DEGREE EXAMINATION
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Q. P. Code : 524054

Time : 180 Minutes

Maximum: 50 Marks

Answer **ALL** questions in the same order.
Draw Suitable diagrams wherever necessary

I. Elaborate on :

1. Draw an oxygen dissociation curve and describe how oxygen is transported in the blood.
Depict the Bohr's effect. (1 x 10 = 10)
2. Classify pain. What are the receptors for pain?
Describe the dual Pathways for pain. What is Analgesic system in the brain? (1 x 5 = 5)

II. Write Short notes on :

(10 x 2 = 20)

1. Frank-Starling's law of the heart.
2. Cardiac pacemaker potential.
3. Draw a labelled diagram of a normal ECG in lead II. Write a brief note on PR interval.
4. Non progressive shock.
5. Travelling waves in the ear.
6. Ventilation-perfusion ratio.
7. Caisson disease.
8. Brown Sequard syndrome.
9. Functions of Ascending reticular activating system.
10. Role of Purkinje cells of cerebellum.

III. Short Answers on :

(15 x 1 = 15)

1. Astigmatism.
2. Ocular dominance columns.
3. Dicrotic notch.
4. Cardiac reserve.
5. Reynold's number.
6. J point.
7. Extrasystole.
8. Bell-magendie law.
9. Cog-wheel rigidity.
10. Betz cells.
11. Homunculus.
12. Anomic aphasia.
13. Timed vital capacity.
14. Pneumotaxic centre.
15. Asphyxia.

FIRST M.B.B.S. DEGREE EXAMINATION
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Q. P. Code : 524054

Time : 180 Minutes

Maximum: 100 Marks

Answer **ALL** questions.

Draw Suitable diagrams wherever necessary

I. Elaborate on:

Pages Time Marks
(Max.) (Max.) (Max.)

- | | | | |
|---|----|----|----|
| 1. Define cardiac output. Discuss the factors affecting cardiac output and any one method of determination. What is the significance of ejection fraction in ventricular functioning? | 16 | 25 | 15 |
| 2. List the ascending tracts in the spinal cord and discuss the tracts of posterior column with diagram. | 16 | 25 | 15 |

II. Write notes on:

- | | | | |
|--|---|---|---|
| 1. Chemical regulation of respiration. | 3 | 8 | 5 |
| 2. Functions of middle ear. | 3 | 8 | 5 |
| 3. Hypovolumic shock. | 3 | 8 | 5 |
| 4. Ventilation-Perfusion ratio. | 3 | 8 | 5 |
| 5. Parkinson's disease with treatment. | 3 | 8 | 5 |
| 6. Classification of nerve fibres. | 3 | 8 | 5 |
| 7. Heart Sounds. | 3 | 8 | 5 |
| 8. Errors of refraction with correction. | 3 | 8 | 5 |
| 9. Transport of oxygen in blood. | 3 | 8 | 5 |
| 10. Waves of EEG. | 3 | 8 | 5 |

III. Short Answers on:

- | | | | |
|--|---|---|---|
| 1. Reynold's number. | 1 | 5 | 2 |
| 2. Summation. | 1 | 5 | 2 |
| 3. Herring - Breuer inflation reflex. | 1 | 5 | 2 |
| 4. Taste receptor. | 1 | 5 | 2 |
| 5. PR interval in ECG. | 1 | 5 | 2 |
| 6. Chronaxie. | 1 | 5 | 2 |
| 7. CSF formation. | 1 | 5 | 2 |
| 8. Phasic changes in coronary circulation. | 1 | 5 | 2 |
| 9. FEV ₁ . | 1 | 5 | 2 |
| 10. Dopamine. | 1 | 5 | 2 |

FIRST M.B.B.S. DEGREE EXAMINATION
Paper IV – PHYSIOLOGY INCLUDING BIOPHYSICS – II

Q. P. Code : 524054

Time : 180 Minutes

Maximum: 50 Marks

Answer **ALL** questions.

Draw Suitable diagrams wherever necessary

I. Elaborate on:

(2 x 7.5 = 15)

1. Define cardiac cycle.

Describe in detail the pressure volume changes that occur during a Cardiac cycle with suitable Diagram

2. Describe the connections and Functions of Hypothalamus

II. Write notes on :

(10 x 2.5 = 25)

1. Functional Residual capacity and its significance

2. Types of Hypoxia and its cause

3. Respiratory membrane

4. Neural centres for Regulation of respiration

5. Dead space

6. Pacemaker potential

7. Cardiac Index

8. Dark adaptation

9. Functions of Basal Ganglia

10. Vestibulo cerebellum

III. Short Answers on:

(10 x 1 = 10)

1. Muscles of inspiration

2. P50

3. End diastolic volume

4. Attenuation Reflex

5. Perimetry

6. Summation

7. Referred pain

8. Types of memory

9. Thalamic syndrome

10. Kluver Bucy syndrome

[LD 503]

AUGUST 2013

Sub. Code : 4054

FIRST M.B.B.S. DEGREE EXAMINATION
Paper IV – PHYSIOLOGY INCLUDING BIOPHYSICS – II

Q. P. Code : 524054

Time : 180 Minutes

Maximum: 50 Marks

Answer ALL questions.

Draw Suitable diagrams wherever necessary

I. Elaborate on:

(2 x 7.5 = 15)

1. Describe the process of transport of carbondioxide from tissues to lungs.
2. Describe in detail the photochemical mechanism of vision and mechanism of dark adaptation.

II. Write notes on:

(10 x 2.5 = 25)

1. Decompression sickness
2. Middle ear functions
3. Define cardiac output. What are the methods to measure the cardiac output?
4. Heart sounds
5. Define synapse and describe its properties.
6. Describe the functions of thalamus.
7. What are the functions of basal ganglia?
8. Describe the physiology of speech.
9. Decerebrate rigidity.
10. Functions of prefrontal lobe.

III. Short Answers on:

(10 x 1 = 10)

1. What is P50?
2. What are the types of hypoxia?
3. Mention common refractory errors of the eye.
4. SA node as pacemaker.
5. PR interval.
6. Reflex arc.
7. Functions of cerebrospinal fluid.
8. What is righting reflex?
9. Name the nuclei responsible for hunger and satiety in human being.
10. What is referred pain?

FIRST M.B.B.S. DEGREE EXAMINATION
Paper IV – PHYSIOLOGY INCLUDING BIOPHYSICS – II

Q. P. Code : 524054

Time : 180 Minutes

Maximum: 50 Marks

Answer **ALL** questions.

Draw Suitable diagrams wherever necessary

I. Elaborate on:

(2 x 7.5 = 15)

1. Define the terms Cardiac output and Total Peripheral resistance and discuss their determinants.
2. What are the neural mechanisms involved in spontaneous breathing.
Discuss chemical regulation of respiration.
Distinguish between the two types of respiratory failure.

II. Write notes on:

(10 x 2.5 = 25)

1. Describe the 3 bipolar limb leads of ECG.
What is the significance of (a) PR interval (b) ST segment in an ECG?
2. Discuss the changes in ventricular volume during different phases of the cardiac cycle with a diagram.
3. Discuss any two pulmonary function tests which can detect obstructive lung disease.
4. Trace the pathway for perception of fine touch
5. Operant conditioning
6. Clinical features of cerebellar lesions
7. Define muscle tone and discuss the phenomenon responsible for it.
What conditions lead to alterations of tone?
8. Endogenous opioid peptides
9. Refractory errors of the eye
10. Discuss the phenomena by which sound waves in air induce action potentials in the cochlear nerve.

III. Short Answers on:

(10 x 1 = 10)

1. List the types of shock
2. Define Preload and state its effect on cardiac function
3. Baroreceptor reflex
4. What is myocardial infarction? State one ECG change in this condition.
5. Role of myelin sheath in conduction of nerve impulse
6. Conditions where Plantar response is 'extensor'
7. Finding in Weber's test in conduction deafness of the left side
8. Muscle actions responsible for (a) normal expiration (b) forced expiration
9. Oxygen carrying capacity of blood
10. Hypoxic vasoconstriction – where does it occur and what are its complications?

[LF 503]

AUGUST 2014

Sub. Code: 4054

FIRST YEAR M.B.B.S. DEGREE EXAMINATION
Paper IV – PHYSIOLOGY INCLUDING BIOPHYSICS - II
Q. P. Code: 524054

Time: Three Hours

Maximum: 50 Marks

Answer ALL questions in the same order.

I. Essay:

(1 x 10 = 10)

1. Define blood pressure.

Discuss in brief the various factors which influences the pressure.

Add a note on hypertension.

II. Write Notes on:

(2 x 5 = 10)

1. Neural regulation of respiration

2. Functions and tests of cerebellum.

III. Short Answers on:

(10 x 3 = 30)

1. Heart sounds

2. Waves of ECG in Lead II

3. Different types of hypoxia

4. Aphasia

5. Stages of sleep

6. Optic pathway

7. Functions of ascending reticular activating system

8. Components of vestibular apparatus

9. Features of Parkinsons disease

10. Functions of middle ear.
