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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS (Supplementary) Examination 2016

Time: 3 Hrs **Physiology (Paper–II)** **Max. Marks: 100**

Answer all the Questions
Draw Diagrams wherever necessary
Use separate Answer sheet for Section 'A' & 'B'

Section – A

Q1. Write short notes on: **(5X5=25)**

(a) Glomerular Filtration Rate
(b) Cushing's syndrome
(c) Hormonal contraceptives
(d) Functions of hypothalamus
(e) Myopia

Q2. Compare and Contrast: **(5X5=25)**

(a) Cortical nephron and Juxta medullary nephron
(b) Cretinism and myxoedema
(c) Functions of Leydigs cells and Sertoli cell
(d) Fast Pain and Slow pain
(e) Dark adaptation and Light Adaptation

Section-B

Q3. Explain with neat labelled diagram or flow chart: **(5X5=25)**

(a) Micturition Reflex
(b) Regulation of secretion of growth hormone
(c) Pyramidal Tract
(d) Stages of Spermatogenesis
(e) Middle ear structure and function

Q4. Explain the physiological basis of the following: **(5X5=25)**

(a) Angina pectoris
(b) Webers test to evaluate deafness
(c) Reciprocal innervation
(d) Weigh gain in hypothyroidism
(e) Suckling Reflex

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All India Institute of Medical Sciences, Bhubaneswar
1st Professional MBBS (Supplementary) Examination 2016

Time: 3 Hrs **Physiology (Paper–I)** **Max. Marks: 100**

Answer all the Questions
Draw Diagrams wherever necessary
Use separate Answer sheet for Section 'A' & 'B'

Section – A

Q1. Write short notes on: **(5X5=25)**

(a) Functions of Granulocytes
(b) Myosin
(c) Functions of bile
(d) Regulation of Cardiac Output
(e) Chemo receptors

Q2. Compare and Contrast: **(5X5=25)**

(a) Active Transport and Passive Transport
(b) Bleeding time and Clotting Time
(c) Tetanus and Clonus
(d) Intrapleural pressure and Intra pulmonary pressure
(e) Restrictive and obstructive lung diseases

Section–B

Q3. Explain with labelled diagram or flow chart: **(5X5=25)**

(a) Bainbridge Reflex
(b) Mechanism of secretion of Hydrochloric Acid
(c) Neural Regulation of respiration
(d) Phases of Leucopoiesis
(e) Ionic basis of Action potential

Q4. Explain the Physiological basis of the following: **(5X5=25)**

(a) Exercise induces a rise in Systolic Blood Pressure
(b) Peristalsis
(c) Lung alveoli are dry
(d) Rigor Mortis
(e) Physiological Jaundice in New born

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Examination 2016

Time: 3 Hrs | Physiology (Paper –II) | Max. Marks: 100

Answer all the Questions. Draw the diagrams wherever necessary. Use separate Answer sheet for Section 'A' & 'B'

Section – A

Q1. Write short notes on: (5X5=25)

(a) Acclimatization to high altitude
(b) Renal plasma clearance
(c) Mechanism of action of steroid hormones
(d) Endometrial changes during menstrual cycle
(e) Water re-absorption from the different parts of the renal tubules

Q2. Compare and Contrast: (5X5=25)

(a) Functions of LH & FSH in menstrual cycle
(b) Renal handling of water and sodium
(c) Hydrostatic and osmotic pressures in glomerular and muscle capillaries
(d) The afferent arteriole and efferent arteriole
(e) Saltatory and non-saltatory conduction of action potential

Section – B

Q3. Explain with neat labelled diagram or flow chart: (5X5=25)

(a) Multipolar Neuron
(b) Tubulo-glomerular feedback mechanism
(c) Counter current multiplier and exchange system in renal tubules
(d) Taste pathway
(e) Stages of ovarian cycle

Q4. Explain the physiological basis of the following: (5X5=25)

(a) Exophthalmos as a clinical feature of thyroid dysfunction
(b) Parathyroidectomy leads to signs of neuromuscular hyperexitability
(c) Sertoli cells are important in spermatogenesis
(d) Intra uterine contraceptive devices prevent pregnancy
(e) Rubbing relieves pain temporarily

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Examination 2016

Time: 3 Hrs | Physiology (Paper – I) | Max. Marks: 100

Answer all the Questions. Draw the diagrams wherever necessary
Use separate Answer sheet for Section 'A' & 'B'

Section - A

Q1. Write short notes on: (5X5=25)

(a) Secondary Active Transport
(b) Platelet activation
(c) Medullary Respiratory Centres
(d) Starling's Law of the Heart and its applications
(e) Enterohepatic Circulation

Q2. Compare and Contrast: (5X5=25)

(a) Simple diffusion and Facilitated diffusion
(b) Cell Mediated immunity and Humoral immunity
(c) Action potential in Working Myocardial and Pacemaker Cells
(d) Pulmonary Circulation and Systemic Circulation
(e) Gastrin and Secretin

Section - B

Q3. Explain with labelled diagram or flow chart: (5X5=25)

(a) Molecular Mechanism of skeletal muscle contraction
(b) Coagulation of blood
(c) Spread of Cardiac Impulse
(d) Respiratory pressures
(e) Mechanism of gastric acid secretion

Q4. Explain the Physiological basis of the following: (5X5=25)

(a) Conduction in myelinated nerve fibres is 50 times faster than unmyelinated nerve fibres
(b) G6PD deficiency can cause hemolysis
(c) Surfactant contributes to the stability of the alveoli
(d) Compensatory pause follows ventricular premature beats
(e) Bile salts are essential for lipid digestion

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS(Supplementary) Examination 2017

Physiology (Paper –II)

Time: 3 Hrs **Max. Marks: 100**

Answer all the Questions. Draw diagrams wherever necessary.
Use separate Answer sheet for Section 'A' & 'B'

Section – A

Q1. Write short notes on: (5 x 5 = 25)

a) Renal threshold
b) Circumventricular organs
c) Beneficial effects of Kapalabhati
d) Immunological basis of pregnancy test
e) Permissive action of glucocorticoids

Q2. Compare and Contrast: (5 x 5 = 25)

a) Rigidity and spasticity of muscle
b) Renal glycosuria and alimentary glycosuria
c) Diabetes mellitus and Diabetes insipidus
d) Conductive deafness and nerve deafness
e) Poliferative and secretory phase of menstrual cycle

Section – B

Q3. Explain with neat labelled diagram or flow chart: (5 x 5 = 25)

a) Tubulo-glomeluar feedback mechanisms
b) Feedback control of Growth Hormone secretion
c) Correction of hypermetropia
d) Convergence theory of referred pain
e) Innervation of muscle spindle

Q4. Explain the physiological basis of the following: (5 x 5 = 25)

a) Inulin clearance is equal to GFR
b) Muscle wasting is seen in Lower Motor Neuron (LMN) paralysis
c) Near point recedes with age
d) Testosterone is essential for spermatogenesis.
e) Pigmentation of skin is seen in Addison' disease

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All India Institute of Medical Sciences, Bhubaneswar
1st Professional MBBS (Supplementary) Examination 2017

Time: 3 Hrs **Physiology (Paper – I)** **Max. Marks: 100**

Answer all the Questions. Draw diagrams wherever necessary
Use separate Answer sheet for Section "A" & "B"

Section - A

Q1. Write short notes on: (5 x 5 = 25)

a) Function of Bile Salts
b) Timed vital capacity
c) Antigen presenting cells
d) Pacemaker potential
e) Rigor mortis

Q2. Compare and Contrast: (5 x 5 = 25)

a) Prehepatic and post hepatic jaundice
b) Anatomical and Physiological dead space
c) Myelinated and non-myelinated nerve fiber
d) Peristalsis and segmental contraction of intestine
e) Cardiac Muscle action potential and skeletal muscle action potential

Section - B

Q3. Explain with labelled diagram or flow chart: (5 x 5 = 25)

a) Organization of sympathetic nervous system
b) Mechanism of secretion of HCL in stomach
c) ECG abnormalities in myocardial infarction
d) Lymphopoiesis
e) Transport of carbon dioxide in the blood

Q4. Explain the Physiological basis of the following: (5 x 5 = 25)

a) Oedema formation
b) Dyspnoea
c) Peptic ulcer
d) Prolonged clotting time in Vitamin K deficiency.
e) Cardiac muscle cannot be tetanized

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Examination 2017

Physiology (Paper –II)

Time: 3 Hrs **Max. Marks: 100**

Answer all the Questions. Draw diagrams wherever necessary.
Use separate Answer sheet for Section 'A' & ' B'

Section – A

Q1. Write short notes on: (5 x 5 = 25)

a) Renal control of acid base balance
b) Relaxation Response
c) Hypothalamic mechanism of thermoregulation
d) Human Chorionic gonadotropin
e) Inappropriate ADH secretion

Q2. Compare and Contrast: (5 x 5 = 25)

a) Spinocerebellum and Vestibulocerebellum
b) Myopia and Hypermetropia
c) Acute mountain sickness and chronic mountain sickness
d) Light Adaptation and Dark Adaptation
e) Thyroid dwarfism and Pituitary dwarfism

Section – B

Q3. Explain with neat labelled diagram or flow chart: (5 x 5 = 25)

a) Principle of dialysis with an artificial kidney
b) Synthesis and secretion of Peptide hormone
c) Olfactory signal transduction
d) Neural pathway for fine touch sensation.
e) Regulation of hypothalamo-pituitary-gonadal axis in male

Q4. Explain the physiological basis of the following: (5 x 5 = 25)

a) Diuretic action
b) Hydrocephalus
c) Iodine deficiency leads to goitre.
d) Vit. A deficiency leads to night blindness.
e) Exaggerated reflexes are seen in upper motor neuron paralysis

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All India Institute of Medical Sciences, Bhubaneswar
1st Professional MBBS Examination 2017
Physiology (Paper – I)

Time: 3 Hrs **Max. Marks: 100**

Answer all the Questions. Draw diagrams wherever necessary
Use separate Answer sheet for Section 'A' & 'B'

Section - A

Q1. Write short notes on: (5 x 5 = 25)

a) Gap junction
b) Airway Resistance
c) Cell mediated Immunity
d) Capillary circulation
e) Mechanism of smooth muscle contraction

Q2. Compare and Contrast: (5 x 5 = 25)

a) First Degree Heart block and second-degree Heart block
b) Adult haemoglobin and foetal haemoglobin.
c) Action potential and electrotonic potential
d) Ventilation and perfusion.
e) Isotonic Contraction/Isometric Contraction

Section - B

Q3. Explain with labelled diagram or flow chart: (5 x 5 = 25)

a) Events occurring at neuromuscular junction
b) Complement activation Pathway
c) Ventricular and Atrial pressure changes during Cardiac cycle.
d) Chemical regulation of respiration
e) Bilirubin formation & Secretion

Q4. Explain the Physiological basis of the following: (5 x 5 = 25)

a) Oxygen debt mechanism
b) Patent ductus arteriosus
c) Prolonged hyperventilation may lead to tetany
d) Steatorrhea.
e) Plasma colloid Osmotic Pressure

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Supplementary Examination 2018

Physiology (Paper–II)

Time: 3 Hrs | Max. Marks: 100

Answer all the Questions. Draw diagrams wherever necessary.
Use separate Answer sheet for Section 'A' & 'B'

Section–A

Q1. Write short notes on: (5x5=25)

a) Glomerular Filtration rate
b) Functions of cerebellum
c) Muscle spindle
d) Oral Contraceptive Pills
e) Cushing Syndrome

Q2. Compare and Contrast: (5x5=25)

a) Cortical and juxta-medullary nephrons
b) Pyramidal and Extrapyramidal fibres
c) Conductive and Nerve Deafness
d) Pituitary Dwarfism and Hypothyroid Dwarfism
e) Diabetes Mellitus and Insipidus

Section–B

Q3. Explain with neat labelled diagram or flow chart: (5x5=25)

a) Tubuloglomerular balance
b) Dorsal Column Pathway
c) Synthesis of Thyroid Hormones
d) Spermatogenesis
e) Visual field defects

Q4. Explain the physiological basis of the following: (5x5=25)

a) Near vision recedes with age
b) Lactation leads to temporary infertility
c) Dark adaptation
d) Decerebrate Rigidity
e) Referred Pain

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All India Institute of Medical Sciences, Bhubaneswar
1st Professional MBBS Supplementary Examination 2018

Time: 3 Hrs | Physiology (Paper – I) | Max. Marks: 100

Answer all the Questions. Draw diagrams wherever necessary
Use separate Answer sheet for Section 'A' & 'B'

Section-A

Q1. Write short notes on: (5x5=25)

a) Resting Membrane Potential
b) Hypoxia
c) Apoptosis
d) Landsteiner's law
e) Bile Salts

Q2. Compare and Contrast: (5x5=25)

a) Obstructive Jaundice and Haemolytic Jaundice
b) Systole and diastole of Heart
c) Foetal Hb and Adult Hb
d) Primary and Secondary immune response
e) ABO system and Rh Blood group

Section-B

Q3. Explain with labelled diagram or flow chart: (5x5=25)

a) Excitation contraction coupling
b) HCL secretion from parietal cells
c) Baroreceptor Reflex
d) Organization of Respiratory Centres
e) Normal ECG complex

Q4. Explain the Physiological basis of the following: (5 x5=25)

a) Rigor Mortis
b) High altitude dwellers suffer from polycythaemia
c) A-V Nodal delay
d) Oedema
e) Chemoreceptors is not stimulated in anaemia

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Final Examination 2018

Time: 3 Hrs | Physiology (Paper –II) | Max. Marks: 100

Answer all the Questions. Draw diagrams wherever necessary.
Use separate Answer sheet for Section 'A' & ' B'

Section – A

Q1. Write short notes on: (5x5=25)

a) Juxtaglomerular Aparatus
b) Circadian Rhythm
c) Pranayama
d) Tympanic reflex
e) Functions of hypothalamus

Q2. Compare and Contrast: (5x5=25)

a) Broca's and Wernicke's aphasia
b) Parathormone and Calcitonin
c) Oestrogen and Progesteron
d) Rods and cones
e) Cortial and juxta-medullary nephrons

Section – B

Q3. Explain with neat labelled diagram or flow chart: (5x5=25)

a) Olfactory pathway
b) Stages of Follicular growth in Ovary
c) The Micturition Reflex
d) Neural pathway for pain
e) Pyramidal tract

Q4. Explain the physiological basis of the following: (5x5=25)

a) Aldosterone escape phenomenon
b) Caisson disease
c) Rigidity in Parkinson's disease
d) Safe Period method of contraception
e) Autoregulation of renal blood flow and glomerular filtration rate

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Final Examination 2018

Time: 3 Hrs | Physiology (Paper – I) | Max. Marks: 100

Answer all the Questions. Draw diagrams wherever necessary
Use separate Answer sheet for Section 'A' & 'B'

Section - A

Q1. Write short notes on: (5x5=25)

a) Molecular Motors
b) Balanced diet
c) Anti coagulant
d) Primary active transport
e) Stages of deglutition

Q2. Compare and Contrast: (5x5=25)

a) Electrical activity of smooth and Cardiac muscles
b) Pancreatic juice and bile
c) First Heart sound and second Heart sound
d) Innate and acquired immunity
e) Ventilation and perfusion in the apical and basal regions of the lung

Section - B

Q3. Explain with labelled diagram or flow chart: (5x5=25)

a) Erythropoiesis
b) Left ventricular pressure and volume changes
c) Nervous regulation of salivary secretion
d) O_2 –Hb dissociation curve
e) Starling forces acting across the capillaries

Q4. Explain the Physiological basis of the following: (5 x5=25)

a) Pulmonary oedema
b) Denervation hypersensitivity
c) Cyanosis is not seen in anaemic hypoxia
d) Automaticity of the heart
e) Erythroblastosis fetalis in second pregnancy

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All India Institute of Medical Sciences, Bhubaneswar
1st Professional MBBS Examination 2015
Physiology (Paper – I)

Time: 3 Hrs Max. Marks: 100

Q1. Write short notes on: (5X5=25)

(a) Iron deficiency anaemia
(b) Pulmonary surfactant
(c) Homeostasis
(d) Baro-reflex mechanism
(e) Functions of bile

2. Compare and Contrast: (5X5=25)

(a) Hepatic & obstructive jaundice
(b) Temporal and spatial summation
(c) Active and passive transport
(d) Pacemaker potential and cardiac muscle action potential
(e) Restrictive and obstructive lung diseases

3. Explain with labelled diagram or flow chart: (5X5=25)

(a) Endocytosis
(b) Genesis of respiration
(c) Oxygen-haemoglobin dissociation curve
(d) Molecular basis of length-tension relationship in skeletal muscles
(e) Cardiac cycle depicting left atrial pressure, left ventricular pressure, aortic pressure, ventricular volume, heart sounds and electrocardiogram

4. Explain the Physiological basis of the following: (5X5=25)

(a) Cyanosis is very rare in anaemic person
(b) Ingestion of dietary fibres are recommended in obesity
(c) Idioventricular rhythm occurs after complete heart block
(d) PCV of venous blood is greater than that of arterial blood
(e) The excitation contraction coupling in smooth muscles takes longer time than that in skeletal muscles

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Examination 2015

Physiology (Paper –II)

Time: 3 Hrs **Max. Marks: 100**

Q1. Write short notes on: **(5X5=25)**

(a) Acclimatization to high altitude
(b) Metabolic functions of glucocorticoids
(c) Glomerular Filtration Rate
(d) Electrical and ionic events in "Pacinian corpuscles"
(e) Role of middle ear in hearing

Q2. Compare and Contrast: **(5X5=25)**

(a) Habituation and sensitization
(b) Renal handling of water and sodium
(c) Diabetes mellitus & diabetes insipidus
(d) Functions of LH & FSH in menstrual cycle
(e) Lower motor neuron (LMN) lesion and Upper motor neuron (UMN) lesion

Q3. Explain with neat labelled diagram or flow chart: **(5X5=25)**

(a) REM and NREM sleep
(b) Tubulo-glomerular feedback mechanism
(c) Bitemporal hemianopia due to lesion at optic chiasma
(d) Biosynthesis of thyroid hormone
(e) Different stages of ovarian cycle

Q4. Explain the physiological basis of the following: **(5X5=25)**

(a) Sympathetic stimulation leads to fight, flight and fright
(b) Extensor rigidity is observed in decerebrate animals
(c) Rubbing a painful finger relieves pain temporarily
(d) Blood flow in the vasa recta is sluggish and counter current in nature
(e) Carpopedal spasm is seen in hypoparathyroidism

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS (Supplementary) Examination 2015

Physiology (Paper–I)

Time: 3 Hrs Max. Marks: 100

Answer all the Questions
Draw Diagrams wherever necessary
Use separate Answer sheet for Section 'A' & 'B'

Section – A

Q1. Write short notes on: (5X5=25)

(a) Sodium Potassium Pump
(b) Excitation contraction coupling
(c) Erythroblastosis Fetalis
(d) Baroreceptors
(e) Hypoxic hypoxia

Q2. Compare and Contrast: (5X5=25)

(a) Facilitated diffusion and secondary active transport
(b) Minor cross matching and Major cross matching of Blood
(c) Isometric and isotonic contraction
(d) Obstructive and central apnoea
(e) Reversible shock and Irreversible shock

Section–B

Q3. Explain with labelled diagram or flow chart: (5X5=25)

(a) Renin angiotensin mechanism
(b) Conduction system of the heart
(c) Oxygen-haemoglobin dissociation curve
(d) Phases of erythropoesis
(e) Neuro-muscular junction

Q4. Explain the Physiological basis of the following: (5X5=25)

(a) Sinus node is the pacemaker of the heart
(b) Ranitidine is given in gastritis
(c) Respiratory Distress syndrome occurs in Premature babies
(d) A booster dose is given in vaccination
(e) B12 deficiency leads to Anaemia

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All India Institute of Medical Sciences, Bhubaneswar
1st Professional MBBS (Supplementary) Examination 2015
Physiology (Paper–II)

Time: 3 Hrs | Max. Marks: 100

Answer all the Questions
Draw Diagrams wherever necessary
Use separate Answer sheet for Section 'A' & 'B'

Section – A

Q1. Write short notes on: (5X5=25)

(a) Micturition Reflex
(b) Cretinism
(c) Safe period contraception
(d) REM Sleep
(e) Impedance matching function of middle ear

Q2. Compare and Contrast: (5X5=25)

(a) Functions of PCT and DCT in Kidney
(b) Acromegaly and Gigantism
(c) Functions of Leydigs cells and Sertoli cell
(d) Fast Pain and Slow pain
(e) Conductive deafness and sensorineural deafness

Section-B

Q3. Explain with neat labelled diagram or flow chart: (5X5=25)

(a) Countercurrent multiplier function of loop of henle
(b) Milk let down reflex
(c) Regulation of calcium in plasma
(d) Structure of muscle spindle and its nerve supply
(e) Rhodopsin – Retinal visual cycle

Q4. Explain the physiological basis of the following: (5X5=25)

(a) Pain of Angina is felt in the left arm
(b) Polyurea is a symptom of Diabetes mellitus
(c) A limb is immediately withdrawn on touching a hot pan
(d) There is difficulty in near vision with old age
(e) Estrogen/progesterone tablets are used for contraception

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All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Examination 2019

Time: 3 Hrs **Physiology (Paper–I)** **Max. Marks: 100**

INSTRUCTIONS:

- Answer all questions.
- Answer Sections A and B in separate answer booklets.
- Draw well labelled diagrams wherever necessary.
- Write answers in sequence.
- Strike off all blank pages.
- On additional answer sheets, do not write your Roll number.
- Mention the number of additional answer sheets used and the sheet number on page one of the main answer booklets.

SECTION-A (50 Marks)

Long Answer Question **(1x10=10)**

1.

(a) Explain the mechanisms involved in blood coagulation. (6)
(b) Give one example for endogenous anticoagulant and mechanism of action (2)
(c) Give one example for exogenous anticoagulant and mechanism of action. (2)

Short Answer Questions **(8x5=40)**

2.

(a) Explain briefly the transmission of impulse at neuromuscular junction. (3)
(b) Add a note on myasthenia gravis (2)

3.

(a) Explain the mechanism of HCl (Hydrochloric acid) secretion in the stomach. (3)
(b) How normal gastric mucosa is protected against the corrosion by acid? (2)

4. Explain "Active transport" across cell membrane using suitable example. (5)

5.

(a) Define anaemia. (1)
(b) Give morphological classification of anaemias giving suitable examples (4)

6

(a) Classify nerve fibres. (2)
(b) What are the effects of injury to a nerve fibre? (3)

7.

(a) What is Law of Gut? (2)
(b) Explain the small intestinal movements. (3)

SECTION-B (50 Marks)

Long Answer Question **(1x10=10**

10.

(a) Describe the connections and functions of basal ganglia. (7

(b) Write a note on Parkinsonism. (3

Short Answer Questions **(8x5=40)**

11. Discuss briefly on 'aphasia'. (5)

12. Briefly explain the effects of partial transection of spinal cord on RIGHT side at T6 level (5

13.

(a) Explain "bitemporal hemianopia". (4)

(b) Name one common cause for "bitemporal hemianopia". (1)

14. Explain the Theories of Hearing (5)

15.

(a) What are the common waves in EEG? (3)

(b) Name the state of brain causing each type of wave. (2)

16. Compare and contrast the effects of lesions of upper motor neuron (UMN) and lower motor neuron (LMN). (5)

17.

(a) Explain with example "Conditioned reflex". (3)

(b) What are the properties of conditioned reflex? (2)

18. Trace the taste pathway to the brain. (5)

All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Examination 2019

Time: 3 Hrs **Physiology (Paper–II)** **Max. Marks: 100**

INSTRUCTIONS:

- Answer all questions.
- Answer Sections A and B in separate answer booklets.
- Draw well labelled diagrams wherever necessary.
- Write answers in sequence.
- Strike off all blank pages.
- On additional answer sheets, do not write your Roll number.
- Mention the number of additional answer sheets used and the sheet number on page one of the main answer booklets.

SECTION-A (50 Marks)

Long Answer Question **(1x10=10)**

1.

(a) Explain the thyroxine synthesis and secretion. (4)
(b) How is thyroxine synthesis and secretion regulated? (3)
(c) Write a note on the effect thyroid hormone deficiency in infants (3)

Short Answer Questions **(8 x 5=40)**

2. Briefly explain the functions of proximal convoluted tubule (PCT) in nephron (5)
3. Explain briefly about the mechanism of Tubulo-glomerular feedback. (5)
4. What are the functions of Sertoli cells? (5)
5. Explain various female contraception methods used in birth control. (5)
6. Explain a neuroendocrine reflex using a suitable example. (5)
7. Explain the basis of hypo-calcaemic tetany (5)
8.

(a) Explain spermatogenesis (3)
(b) List the factors affecting spermatogenesis (2)

9.

(a) Briefly explain cystometrogram. (3)
(b) What is 'atonic bladder'? (2)

anuresmic

8. Explain the effects of following changes in ECF on action potential in a nerve fibre.
   (a) Increased K+ concentration (hyperkalemia) (2.5)
   (b) Increased Na+ concentration (hypernatremia) (2.5)

9. Explain the basis for oral rehydration therapy. (5)

SECTION-B (50 Marks)

Long Answer Question **(1x10=10**

10.
   (a) Define cardiac output. (1)
   (b) Discuss the factors affecting cardiac output. (7)
   (c) What is the significance of ejection fraction in ventricular functioning? (2)

Short Answer Questions **(8x5=40)**

11.
   (a) Draw a labelled diagram of ECG (1)
   (b) Explain the origin of each wave in the ECG (2)
   (c) What is Einthoven's triangle? (2)

12. Depict the Ventricular action potential with its ionic basis. (5)

13.
   (a) Explain the functions of surfactant. (3)
   (b) What is the effect of lack of surfactant in new born? (2)

14.
   (a) Explain the basis for rhythmicity of heart. (3)
   (b) What is the effect of stimulation of vagus on heart? (2)

15. A sixty-year-old man complained of breathlessness and pain in the chest and left arm while walking briskly. These symptoms subsided following rest.
   (a) Comment on his condition. (1)
   (b) What may be the cause for pain? (1.5)
   (c) Why was it appearing on brisk walking? (1.5)
   (d) Why it was relieved following rest? (1)

16. Explain Hamburger's chloride shift in transport of carbon dioxide. (5)

17. Explain the following: (2.5)
   (a) Asphyxia (2.5)
   (b) Carbon monoxide poisoning

18. Describe the role of baroreceptor reflex in the regulation of blood pressure. (5)

All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Examination 2020

Time: 3 Hrs **Physiology (Paper–I)** **Max. Marks: 100**

INSTRUCTIONS:

- Answer all questions.
- Answer Sections A and B in separate answer booklets.
- Draw well labelled diagrams wherever necessary.
- Write answers in sequence.
- Strike off all blank pages.
- On additional answer sheets, do not write your Roll number.
- Mention the number of additional answer sheets used and the sheet number on page one of the main answer booklets.

SECTION-A (50 Marks)

Long Answer Question **(1x10=10)**

1.
   (a) Explain the basis of ABO blood grouping. (4)
   (b) Write a note on Transfusion reaction (4)
   (c) What are the disadvantages of prolonged storage of blood in blood bank? (2)

Short Answer Questions **(8x5=40)**

2. (a) Compare the composition of plasma, interstitial fluid and intracellular fluid . (3)
   (b) Explain the differences (2)
3.
   (a) Enumerate the lipolytic enzymes of pancreas. (1)
   (b) Describe their function (4)
4.
   (a) Discuss different types of axoplasmic transport (3)
   (b) Describe the molecular motors involved in each (2)
5.
   (a) Describe the sources of energy for muscle contraction (3)
   (b) Explain how energy is transferred to the contractile mechanism (2)
6. Name some dietary fibres. Are such fibres beneficial for consumption or not, Justify. (1+4)
7.
   (a) Enumerate contractile and regulatory proteins of skeletal muscle. (1)
   (b) List the sequence of events in contraction and relaxation of skeletal muscle. (4)
8.
   (a) Describe enterohepatic circulation of bile salts with the help of a neat labelled diagram. (3)
   (b) Explain the physiological significance of it. (2)
9.
   (a) Define basic electric rhythm (BER) and migration motor complex (MMC). (2)
   (b) State the salient features of MMC and explain its role in the regulation of gastrointestinal motility. (3)

SECTION-B (50 Marks)

Long Answer Question **(1x10=10)**

10.

(a) Enumerate the components of alveolo-capillary membrane/respiratory membrane. (2)

(b) List the factors affecting gaseous exchange at the respiratory membrane. (2)

(c) Explain why arterial PO_2 (PaO_2) is less than alveolar PO_2 (PAO_2). (2)

(d) Explain how "fibrosis of lung" and "emphysema" affect gaseous exchange at the respiratory membrane. (2+2=4)

Short Answer Questions **(8x5=40)**

11. Explain the physiological basis of the following:

(a) Collapse of lungs (2.5)

(b) Sleep apnoea (2.5)

12. Explain with reason the different types of heart blocks

13.

(a) Explain the direction and normal value of mean electrical axis (MEA) of the ventricles or mean QRS vector. (2)

(b) Enumerate ONE example of right axis deviation and left axis deviation of MEA. (1)

(c) Explain physiological significance of 'J' point in ECG. (2)

14. Explain the pressure volume changes in left ventricle during cardiac cycle with the help of a neat labelled diagram.

15.

(a) Enumerate various chemoreceptors which are involved in regulation of respiration. (1)

(b) List the chemical factors which regulate respiration. (1)

(c) Explain the mechanism by which these chemical factors regulate respiration. (3)

16. A 30-year old man is brought to Trauma and Emergency Department of a hospital with a history of road traffic accident. His skin is cold and clammy. His blood pressure is 90/50 mm Hg and heart rate is 120 beats/min,

(a) List the four major pathophysiologic causes of shock. State which is likely in this patient. (2)

(b) Explain the underlying pathophysiological mechanisms of the findings. (3)

17.

(a) Describe the principle of indicator dilution technique for measuring cardiac output (2)

(b) Explain how cardiac output is calculated by this technique in practice. (2)

(c) State the normal value of ejection fraction. (1)

18. Explain the following

(a) Hering – Bruer inflation reflex (3)

(b) J-reflex (2)

All India Institute of Medical Sciences, Bhubaneswar

1st Professional MBBS Examination 2020

Time: 3 Hrs **Physiology (Paper–II)** **Max. Marks: 100**

INSTRUCTIONS:

- Answer all questions.
- Answer Sections A and B in separate answer booklets.
- Draw well labelled diagrams wherever necessary.
- Write answers in sequence.
- Strike off all blank pages.
- On additional answer sheets, do not write your Roll number.
- Mention the number of additional answer sheets used and the sheet number on page one of the main answer booklets.

SECTION-A (50 Marks)

Long Answer Question **(1x10=10)**

1.

a. Explain the role of parathyroid hormone in body calcium homeostasis. (5)

b. How is the parathyroid hormone secretion regulated? (2)

c. Write a note on hypo- and hyper-parathyroidism. (3)

Short Answer Questions **(8 x 5=40)**

2. Explain how loop diuretics and thiazide diuretics can cause excessive K+ secretion and hypokalemia. (2.5+2.5)

3.

a. What are the differences between T4 (thyroxine) and T3 (triiodothyronine). (4)

b. Name the thyroid-binding protein in the blood. (1)

4. Briefly describe the Hypothalamo-Hypophyseal portal system?

5. Briefly explain the mechanisms for Na^+ reabsorption along the renal tubular system.

6.

a. Enumerate the functions of testosterone. (3)

b. Add a note on undescended testes. (2)

7. Explain the indicators of ovulation.

8. Explain the regulatory mechanisms for the secretion of pancreatic Insulin.

9. Explain the pathophysiology of

a. Iodine deficiency goitre. (3)

b. Pituitary dwarfism. (2)

SECTION-B (50 Marks)

Long Answer Question **(1x10=10)**

10.

a. Classify types of sensory receptors. (3)

b. Draw a labelled diagram of dorsal column-medial lemniscus system. (4)

c. Explain the significance of the sensations carried by the dorsal column-medial lemniscus system. (3)

Short Answer Questions **(8x5=40)**

11. Discuss briefly the clinical sign of Parkinson's disease

12. What is the difference between REM and NREM sleep?

13. What are the physiological benefits of yoga? Illustrate changes occur in muscle metabolism as the intensity of exercise is increased by flowchart. (2+3)

14. Briefly describe the movement disorders that may be found in a patient with damage to the deep cerebellar nuclei.

15.

a. Briefly explain the retinal mechanisms for processing of colour vision. (3)

b. Add a note on colour blindness. (2)

16.

a. Explain the cochlear mechanisms for discrimination of pitch and loudness of a sound. (4)

b. What is presbycusis? (1)

17. Explain the role of hypothalamus in regulation of food intake.

18.

a. With the help of a diagram, briefly explain the muscle stretch reflex. (4)

b. What is inverse stretch reflex? (1)