

[LP 0819]

AUGUST 2019

Sub. Code: 1242

B.Sc. CRITICAL CARE TECHNOLOGY
(New Syllabus 2018-2019)

FIRST YEAR

Paper II – PHYSIOLOGY AND BASIC PHYSICS

Q.P Code: 801242

Time : Three Hours

Maximum : 100 Marks

Answer All Questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe in detail about the regulation of blood pressure and factors maintaining it.
2. Write about the chemical and neural regulation of respiration.
3. Name the hormones secreted by thyroid gland and its functions.

II. Write Notes on:

(8 x 5 = 40)

1. Functions of cerebrospinal fluid.
2. Explain the three states of matter.
3. Ovulation.
4. Maturation.
5. Functions of white blood cells.
6. Describe the principles that govern the fluid dynamics.
7. Acid base balance.
8. Electrocardiogram.

III. Short Answers on:

(10 x 3 = 30)

1. Define Hemostasis.
2. Mention the bleeding disorders.
3. Functions of kidney.
4. Glomerular filtration Rate.
5. Mention the functions of saliva.
6. Name the ocular muscles.
7. Milk ejection reflex.
8. Define ECG and write about ECG leads.
9. Define Dead space.
10. Diabetes Mellitus.

B.Sc. CRITICAL CARE TECHNOLOGY
(New Syllabus 2018-2019)

FIRST YEAR

Paper II – PHYSIOLOGY AND BASIC PHYSICS

Q.P Code: 801242

Time : Three Hours

Maximum : 100 Marks

Answer All Questions

I. Elaborate on: (3 x 10 = 30)

1. Describe the various phases of gastric secretion and mention the functions of stomach.
2. Define Erythropoiesis. List the different stages of erythropoiesis.
3. Describe the different stages of urine formation.

II. Write Notes on: (8 x 5 = 40)

1. Name the hormones of parathyroid gland and add a note on calcitonin.
2. Composition of Blood.
3. Erythrocyte Sedimentation Rate.
4. Functions of bile.
5. Heart Sounds.
6. Mechanism of Respiration.
7. Storage of medical gases in cylinders.
8. What is piped distribution system?

III. Short Answers on: (10 x 3 = 30)

1. Oxygen debt.
2. Properties of cardiac muscle.
3. What is meant by Arterial blood gas analysis?
4. What is respiratory acidosis and write the causes for it?
5. Mention the functions of large intestine.
6. Define cardiac cycle and mention the systolic events.
7. What is acute renal failure?
8. Functions of platelets.
9. Accommodation reflex.
10. Transport of CO₂.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0321]

MARCH 2021

Sub. Code: 1242

(AUGUST 2020 EXAM SESSION)

B.Sc. CRITICAL CARE TECHNOLOGY

FIRST YEAR (From 2018-2019 onwards)

PAPER II – PHYSIOLOGY+BASIC PHYSICS

Q.P. Code : 801242

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Define Erythropoiesis. Describe in detail the factors influencing erythropoiesis.
2. Define Cardiac cycle. Explain with the help of diagram the pressure and volume changes during cardiac cycle.
3. Name the anterior pituitary hormones. Elaborate the functions of growth hormone and add a note on dwarfism.

II. Write notes on:

(8 x 5 = 40)

1. Describe the conducting system of heart.
2. Classify Hypoxia. Explain any two of them.
3. Write notes on Phagocytosis.
4. Describe the digestion of carbohydrates.
5. Explain the structure and functions juxta glomerular apparatus.
6. Stages of spermatogenesis
7. Write about a. Pascal's law b. Boyle's law c. Dalton's law
8. Functions of cerebellum

III. Short answers on:

(10 x 3 = 30)

1. Mention any three functions of blood.
2. What are the types of neuroglia?
3. Define blood pressure. What is the normal blood Pressure in an adult?
4. Name the muscles of respiration.
5. List any three functions of liver
6. Draw a labelled diagram of nephron.
7. List any three properties of reflexes.
8. Name the errors of refraction.
9. Write any three contraceptive methods in females.
10. What is Laplace law?

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0422]

APRIL 2022

Sub. Code: 1242

(FEBRUARY 2021 & AUGUST 2021 EXAM SESSIONS)

**B.Sc. CRITICAL CARE TECHNOLOGY
FIRST YEAR (Regulations 2018-2019)
PAPER II-PHYSIOLOGY & BASIC PHYSICS
Q.P. Code: 801242**

Time: Three hours

Maximum: 100 Marks

Answer ALL Questions

- I. Elaborate on:** **(3x10=30)**
1. Define Cardiac output. Describe the factors affecting cardiac output. Add note on Fick's principle.
 2. Name the respiratory centers. Discuss in detail about neural regulation of respiration.
 3. Define Erythropoiesis. Describe the stages and factors affecting Erythropoiesis.
- II. Write Notes on :** **(8x5 = 40)**
1. Uterine changes of menstrual cycle.
 2. List the functions of Thyroid hormone.
 3. Micturition reflex
 4. Enumerate the functions of saliva.
 5. Composition and functions of Cerebrospinal fluid.
 6. Clinical uses of Medical gases.
 7. Role of primary buffers in acid base balance.
 8. Types and factors affecting blood flow.
- III. Short answers on:** **(10x3 = 30)**
1. Heart sounds and its causes.
 2. Functions of Agranulocytes.
 3. Mention the types of medical gas cylinders.
 4. Define lung volumes and its values.
 5. Factors affecting rate of diffusion of gases.
 6. Role of humidity in ventilators.
 7. List the non excretory functions of kidney.
 8. Mention the functions of Bile.
 9. List the fundamental units.
 10. Causes and types of Diabetes Mellitus.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1122]

NOVEMBER 2022

Sub. Code: 1242

**B.Sc. CRITICAL CARE TECHNOLOGY
FIRST YEAR (Regulation 2018-2019)
PAPER II - PHYSIOLOGY + BASIC PHYSICS
Q.P. Code: 801242**

Time: Three hours

Maximum: 100 Marks

Answer ALL Questions

I. Elaborate on: (3x10=30)

1. Define Hemostasis. Describe the various stages involved in blood coagulation. Add a note on Hemophilia.
2. Name the Thyroid hormones. Discuss in detail, the secretion and functions of Thyroid hormone. Add a note on Grave's disease.
3. Describe the factors affecting the Hemodynamics.

II. Write Notes on : (8x5= 40)

1. Classification and functions of Leucocytes.
2. Factors affecting Cardiac output.
3. Heart Sounds and its causes.
4. Oxygen dissociation curve and factors affecting it.
5. Describe the properties that characterize three states of matter.
6. Contraceptive methods.
7. Errors of refraction and its corrections.
8. Renal Functional tests.

III. Short answers on: (10x3=30)

1. Define Hypoxia and its types.
2. Functions of neuroglial cells.
3. Define Dalton's law and its application in Medicine.
4. Clinical uses of Arterial blood gas analyzers.
5. List the functions of large intestine.
6. Define cardiac cycle and name the ventricular events.
7. Types of medical gas cylinders.
8. Clinical uses of Erythrocyte Sedimentation Rate (ESR).
9. Define Vital capacity and its values.
10. List the functions of Blood.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0423]

APRIL 2023

Sub. Code: 1242

**B.Sc. CRITICAL CARE TECHNOLOGY
FIRST YEAR (Regulation 2018-2019 onwards)
PAPER II – PHYSIOLOGY + BASIC PHYSICS
Q. P. Code: 801242**

Time: Three hours

Maximum : 100 Marks

Answer ALL Questions

I. Elaborate on: (3 x 10 = 30)

1. Define Hypoxia. Discuss in detail the classification of Hypoxia with examples.
2. Name the blood group systems. Describe ABO system. Add a note on hazards of mismatched blood transfusion.
3. Describe the visual pathway with a labeled diagram. Add a note on effect of lesion at various levels in its course.

II. Write notes on: (8 x 5 = 40)

1. Lung volumes and capacities.
2. Draw a normal ECG and explain the causes for different waves.
3. Functions of Neutrophils.
4. Describe any two basic laws of physics with their clinical application.
5. Write notes on the functions of Growth Hormone.
6. Explain the Micturition Reflex with a neat diagram.
7. Explain the digestion and absorption of Carbohydrates.
8. Describe the principle that Govern fluid dynamics.

III. Short answers on: (10 x 3 = 30)

1. Draw an oxygen dissociation curve and write two factors influencing it.
2. Mention two ECG changes in myocardial infarction.
3. Characteristics of Medical gases.
4. Liquid gas storage.
5. Name the Anterior Pituitary Hormones.
6. Two actions of Oestrogen.
7. Define Leukemia and write any two types.
8. Humidity measurements.
9. What is timed vital capacity?
10. Phases of Menstrual cycle.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1123]

NOVEMBER 2023

Sub. Code: 1242

**B.Sc. CRITICAL CARE TECHNOLOGY
FIRST YEAR (Regulation 2018-2019 onwards)
PAPER II - PHYSIOLOGY + BASIC PHYSICS
Q.P. Code: 801242**

Time: Three hours

Maximum: 100 Marks

Answer ALL Questions

I. Elaborate on: (3 x 10 = 30)

1. Describe in detail the intrinsic pathway of Coagulation. Add a note on Hemophilia.
2. Describe the Transport of Oxygen in the Blood. Add a note on Hypoxia.
3. Draw a labelled diagram showing nerve supply to the Urinary Bladder. Explain the Micturition reflex.

II. Write Notes on : (8 x 5 = 40)

1. Explain Hazards of Mismatched Blood Transfusion.
2. Explain Passive transport.
3. Describe the digestion of Fats.
4. Describe Heart sounds.
5. Describe the principle that govern fluid dynamics.
6. Describe functions of Insulin.
7. Write about a) Coulomb's Law b) Ohm's Law.
8. Explain the role of surfactant in Pulmonary Function.

III. Short answers on: (10 x 3 = 30)

1. Classify Anemia.
2. Types of Colour blindness.
3. What is Gag reflex?
4. Two functions of Oxytocin.
5. Define Systolic Blood Pressure. What is the normal Blood Pressure in an Adult?
6. Write any three contraceptive methods in Males.
7. Liquid gas storage.
8. Draw a labelled diagram of ECG and what are the causes of P and Q waves?
9. Features of Cushing syndrome.
10. What is Bernoulli's principle?

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0424]

APRIL 2024

Sub. Code: 1242

**B.Sc. CRITICAL CARE TECHNOLOGY
FIRST YEAR (Regulation 2018-2019 onwards)
PAPER II - PHYSIOLOGY + BASIC PHYSICS
Q.P. Code: 801242**

Time: Three Hours

Answer All questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Define Cardiac output and Stroke volume. Describe the various factors affecting Cardiac output.
2. Name the Hormones secreted from adrenal cortex. Explain the functions of Cortisol.
3. Define Nephron. Describe the process of Urine formation.

II. Write Notes on :

(8 x 5 = 40)

1. Composition and functions of bile.
2. Define ESR and mention the factors affecting it.
3. Trace the light reflex and give its clinical significance.
4. Composition, formation, circulation and functions of CSF.
5. Enumerate the active transport system across the cell membrane.
6. Define Laplace law and its physiological importance.
7. Differences between Laminar and turbulent blood flow.
8. Oxygen dissociation curve.

III. Short answers on:

(10 x 3 = 30)

1. Mention the functions of Endoplasmic reticulum.
2. Mention the ECG changes in Myocardial Infarction.
3. Enumerate the functions of Platelets.
4. List the various pulmonary function tests.
5. Intracranial pressure and its regulation.
6. Spermatogenesis.
7. Define Metabolic acidosis and mention its causes.
8. Mention the functions of Parathyroid hormones.
9. List the Gas laws.
10. Storage of Oxygen and its uses in Critical Care.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1125]

NOVEMBER 2025

Sub. Code: 1242

**B.Sc. CRITICAL CARE TECHNOLOGY
FIRST YEAR (Regulation 2018-2019 onwards)
PAPER II - PHYSIOLOGY + BASIC PHYSICS
Q.P. Code: 801242**

Time: Three Hours

Answer All Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Describe in detail the mechanism of formation of Urine. Add a note on the various Renal function tests.
2. Write in detail about the regulation of Respiration. Add a note on Hypoxia.
3. List the hormones secreted by the Pituitary gland. Write in detail about the functions of Growth hormone. Add a note on Dwarfism.

II. Write Notes on:

(8 x 5 = 40)

1. Hypovolemic shock.
2. Active Transport.
3. Stages of Deglutition.
4. Waves of Electrocardiogram (ECG).
5. Define Vital Capacity. What is its normal value?
6. Functions of Bile.
7. Functions of Adrenal gland.
8. Conduction system of Heart.

III. Short answers on:

(10 x 3 = 30)

1. Composition of Saliva.
2. Types of Muscles.
3. Erythrocyte Sedimentation Rate (ESR).
4. Define Cyanosis.
5. Importance of Rh factor in blood grouping.
6. List two contraceptive methods for women.
7. List the Errors of Refraction of the Eye.
8. Clinical features Diabetes Mellitus.
9. Mean Arterial Pressure.
10. Mitochondria.
