

[LH 0815]

AUGUST 2015

Sub. Code: 1508

B.Sc. CARDIAC TECHNOLOGY
(New Syllabus 2014-2015)

FIRST YEAR

PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIOCHEMISTRY
RELATED TO CARDIAC TECHNOLOGY

Q.P. Code : 801508

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Draw and explain about trachea bronchial tree of respiratory system.
Add note on pulmonary circulation.
2. Explain the mechanical events of cardiac cycle.
3. Explain the detail about vitamin D. Add a note on calcium homeostasis.

II. Write Notes on:

(8 x 5 = 40)

1. Muscles of respiration.
2. Valves of the heart.
3. Types of epithelial cells.
4. Transport of oxygen.
5. Pacemaker of the heart.
6. Functions of blood.
7. Classification of hetero polysaccharides.
8. Give a note on pellagra.

III. Write Notes on:

(10 x 3 = 30)

1. Draw and label the parts of scapula.
2. Blood vessels of heart.
3. Give a note on cartilages.
4. Types of shock.
5. Landsteiner's law.
6. Define cardiac output.
7. Hormones of posterior pituitary gland.
8. List the fat soluble vitamins.
9. Structure of DNA.
10. Types of antibody.

[LJ 0816]

AUGUST 2016

Sub. Code: 1508

B.Sc. CARDIAC TECHNOLOGY
(New Syllabus 2014-2015)

FIRST YEAR

**PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY**

Q.P. Code: 801508

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the osteology of upper and lower limb.
2. Discuss in detail the various events in cardiac cycle.
3. Explain the classification and functions of lipids.

II. Write notes on:

(8 x 5 = 40)

1. Bronchial tree.
2. Structure and function of nephron.
3. Coronary circulation with diagram.
4. Classification of enzymes.
5. Lipoproteins.
6. Phases of Menstrual cycle.
7. Hazards of mismatched blood transfusion.
8. Vertebral column.

III. Short answers on:

(10 x 3 = 30)

1. Cartilages forming the larynx.
2. tRNA.
3. Pace maker.
4. Essential fatty acids Eg.
5. Pleura
6. Draw and label the features of radius.
7. Frank Starling's law.
8. BMR.
9. Sunshine vitamin.
10. Cardiac output.

B.Sc. CARDIAC TECHNOLOGY
(New Syllabus 2014-2015)

FIRST YEAR

PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY

Q.P. Code: 801508

Time: Three Hours

Maximum: 100 Marks

Answer all questions

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

1. Explain anatomy of coronary circulation with a neat diagram.
2. Explain the mechanism of exchange of gases.
3. Describe in detail the classification of proteins with examples.

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

1. Watson and Crick model of DNA.
2. Classification of Fatty acids.
3. Structure and function of nephron.
4. Pulmonary Circulation.
5. Describe the ABO system of blood grouping.
6. Thoracic vertebrae.
7. Atrioventricular node function.
8. Denaturation of proteins.

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

1. Frank Starling's law.
2. Marasmus.
3. Coenzyme and Isoenzyme.
4. Chargaff's rule.
5. Scapula.
6. Ureter.
7. Sternum.
8. Stroke volume.
9. List the clotting factors.
10. Molarity and normality.

B.Sc. CARDIAC TECHNOLOGY**FIRST YEAR****PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY***Q.P. Code: 801508***Time: Three Hours****Maximum: 100 Marks****Answer all questions****I. Elaborate on:****(3 x 10 = 30)**

1. Describe the heart under the following headings with suitable diagrams:
a) Coverings, b) Anatomical location, c) External features,
d) Surface markings of cardiac valves and auscultatory areas.
2. Describe in detail the various events of the cardiac cycle?
3. What is the normal blood pH? How is it maintained?

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

1. Muscles of respiration.
2. Trachea.
3. Features of thoracic vertebra with suitable diagram.
4. Resistance vessels.
5. What is the normal blood flow through coronary circulation? Explain the phasic changes, measurement and regulation of coronary blood flow?
6. ABO system.
7. Classification of hetero polysaccharides.
8. Give a note on pellagra.

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

1. Describe the three layers of blood vessels including their histology.
2. External features of kidney.
3. Describe the various anatomical positions.
4. Cardiac output.
5. Plasma proteins.
6. Land steiner's law.
7. Hazards of mismatched blood transfusion.
8. Basal metabolic rate.
9. Beri-beri.
10. Write the names of three Essential fatty acids.

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR

**PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY**

Q.P. Code: 801508

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the blood supply of heart in detail with its applied anatomy.
2. Define cardiac output. Mention its normal value. Add a note on factors regulating it.
3. Describe the beta – oxidation of fatty acids and mention the energetic of palmitic acid.

II. Write notes on:

(8 x 5 = 40)

1. Bronchopulmonary segments.
2. Intercostal muscles.
3. Sternum.
4. Sinoatrial node.
5. Oxygen transport in the blood.
6. Hormonal regulation of Vascular Smooth Muscle.
7. Shock.
8. Structure of DNA.

III. Short answers on:

(10 x 3 = 30)

1. Draw the structure of Nephron and label its parts?
2. Enumerate the cells of connective tissue.
3. Name the bones of the upper limb and draw the diagram of parts of young long bone.
4. Mention about types of heart block?
5. Iron deficiency anaemia.
6. Sunshine vitamin.
7. Exchange vessels.
8. Essential amino acids.
9. Coenzyme.
10. Wald's visual cycle.

B.Sc. CARDIAC TECHNOLOGY**FIRST YEAR****PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY***Q.P. Code: 801508***Time: Three Hours****Maximum: 100 Marks****Answer all questions****I. Elaborate on:****(3 x 10 = 30)**

1. Explain lung under the following headings: (i) External features (ii) Fissures and Lobes (iii) Blood supply and (iv) add a note on Bronchial Tree.
2. Define Blood pressure. Describe the regulation of Blood pressure and add a note on hyper tension.
3. Explain in detail about the vitamin D. Add a note on calcium homeostasis.

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

1. Coronary arteries.
2. Muscles of respiration.
3. Pericardium and its sinuses.
4. Pacemaker potential
5. Name the two pathways of coagulation. Describe any one pathway.
6. Special features and regulation of coronary circulation.
7. Active site.
8. Fatty liver.

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

1. Mention the types of cartilage and write the salient features of hyaline cartilage.
2. Trigone of urinary bladder.
3. Typical ribs.
4. Stages of erythropoiesis.
5. Windkessel effect.
6. What is Total Lung Capacity?
7. Cardiac failure.
8. Types of antibody.
9. Amphipathic lipids.
10. Sunshine vitamin.

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR

**PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY**

Q.P. Code: 801508

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Write in detail about Bronchopulmonary segments with a neat labeled diagram. Add a note on its applied anatomy.
2. Write in detail about the Conducting system of heart.
3. Classify vitamins. Write in detail about Fat soluble vitamins.

II. Write notes on:

(8 x 5 = 40)

1. Pulmonary circulation.
2. Structure of kidney with a neat labeled diagram.
3. Thoracic vertebrae.
4. Stroke volume.
5. Capacitance vessels.
6. Structure of Ribo Nucleic Acid.
7. ABO blood grouping system.
8. Essential amino acids.

III. Short answers on:

(10 x 3 = 30)

1. Openings of Urinary bladder.
2. Parts of a Long bone.
3. Typical Intercostal nerve.
4. Hilar structures of left Lung.
5. Tidal volume.
6. Fick's Principle.
7. Syncope.
8. Basal Metabolic Rate.
9. Isoenzymes.
10. Name the Gonadal hormones.

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR

**PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY**

Q.P. Code: 801508

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Write in detail about the Heart under following headings.
a) Coverings b) External features c) Chambers of Heart
d) Valves of Heart e) Surface Marking of Apex of Heart.
2. Describe in detail about the Mechanics of Cardiac Cycle. Add a note on ECG.
3. Describe in detail about the Krebs cycle.

II. Write notes on:

(8 x 5 = 40)

1. Pleura.
2. Typical Rib.
3. Resistance Vessels.
4. Classify body fluids.
5. Components of blood. Add a note on Red Blood Cells.
6. Renal Pelvis.
7. Classify Carbohydrates with examples.
8. Antigen Antibody Reactions.

III. Short answers on:

(10 x 3 = 30)

1. Purkinje fibres.
2. Bones forming the Thoracic cage.
3. Define connective tissue.
4. Vital capacity of Lung.
5. Frank- Sterling's law.
6. Muscles of respiration.
7. Types of RNA.
8. Emulsification.
9. Denaturation of proteins.
10. Rickets.

B.Sc. CARDIAC TECHNOLOGY**FIRST YEAR****PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY***Q.P. Code: 801508***Time: Three Hours****Maximum: 100 Marks****Answer all questions****I. Elaborate on:****(3 x 10 = 30)**

1. Write in detail about Kidney under the following headings with neat labelled diagrams.
 - a) Location
 - b) External Features
 - c) Blood Supply
 - d) Add a note on the structure of Nephron
2. Explain in detail about the Physiology of Respiration under the following headings
 - a) Mechanics of Respiration
 - b) Principles of Gas exchange
3. Classify Antibodies. Write in detail about IgM.

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

1. Intercostal space.
2. Venous drainage of Heart.
3. Classify Cartilage. Write notes on Hyaline cartilage.
4. Cardic failure.
5. Cerebral circulation.
6. Plasma.
7. Marasmus and Kwashiorkor.
8. Classify Proteins with examples.

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

1. Bowman's capsule.
2. Pericardium.
3. Atherosclerosis.
4. Branches of Arch of aorta.
5. Valsalva manoeuvre.
6. Mean Arterial Pressure.
7. Heart sounds.
8. Lipoproteins.
9. Pernicious anaemia.
10. Benedict's test.

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

[AHS 0321]

MARCH 2021

Sub. Code: 1508

(AUGUST 2020 EXAM SESSION)

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR (Regulation 2014-2015)

**PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY**

Q.P. Code : 801508

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Describe in detail about the Chambers of the Heart. Add a note on the Coronary circulation.
2. Describe in detail about the mechanical events of Cardiac cycle. Also mention about the Heart sounds.
3. Describe in detail about the plasma Lipoproteins. Add a note on Fatty liver.

II. Write notes on:

(8 x 5 = 40)

1. Tracheobronchial tree.
2. Intercostal muscles.
3. Coronary Sinus.
4. Structure of kidney with a diagram.
5. Cardiac output.
6. Biochemical functions of Potassium.
7. Glycosaminoglycans.
8. Enzymes that aid in diagnosis of Myocardial Infarction.

III. Short answers on:

(10 x 3 = 30)

1. Femur.
2. Sinoatrial Node.
3. Transitional Epithelium.
4. Blood group antigens.
5. Valsalva manoeuvre.
6. Primary mechanism of hemostasis.
7. Hormones produced from Anterior Pituitary,
8. Types of RNA and their functions.
9. Define Isoenzyme with an example.
10. Write the normal reference values of:
(a) Blood pH, (b) Serum Cholesterol, (c) Postprandial Blood Glucose.

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

[AHS 0422]

APRIL 2022

Sub. Code: 1508

(FEBRUARY 2021 & AUGUST 2021 EXAM SESSIONS)

FIRST YEAR (From 2014-2015 onwards)

B.Sc. CARDIAC TECHNOLOGY

**PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIOCHEMISTRY
RELATED TO CARDIAC TECHNOLOGY**

Q.P NO. 801508

Time: Three Hours

Maximum : 100 Marks

Answer All questions

I. Elaborate on : (3X10=30)

1. Conducting air pathways with suitable diagrams.
2. Describe the relationship between pressure, flow and resistance of the blood vessels.
3. Discuss the control of fluid and electrolyte balance.

II. Write Notes on : (8X5=40)

1. Femur.
2. Origin, Insertion, nerve supply and actions of serratus anterior.
3. Glandular epithelium.
4. Autonomic regulation of the heart.
5. Cerebral circulation.
6. Cardio-respiratory changes during exercises.
7. Properties of proteins.
8. Emulsification tests.

III. Short Answers on : (10X3=30)

1. Clavicle.
2. Valves of the heart.
3. Sternum.
4. Chronic cardiac failure.
5. Principles of gas exchange.
6. Buffers.
7. Molisch's test.
8. Complex biomolecules of cell.
9. Respiratory quotient.
10. Trace elements.

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

[AHS 1122]

NOVEMBER 2022

Sub. Code: 1508

**B.Sc. CARDIAC TECHNOLOGY
FIRST YEAR (Regulation 2014-2015)
PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY
Q.P NO. 801508**

Time: Three Hours

Maximum : 100 Marks

Answer All questions

I. Elaborate on : (3X10=30)

1. Describe in detail about the external features of Heart. Add a note on its applied anatomy.
2. Describe in detail about Cardiac cycle.
3. Classify carbohydrates. Describe the digestion and absorption of carbohydrates.

II. Write Notes on : (8X5=40)

1. Muscles of thorax and its functions.
2. Interior of Right atrium.
3. Vertebral column.
4. Measurement of cardiac output.
5. Peculiarities of pulmonary circulation.
6. Neural regulation of respiration.
7. What are phospholipids? Name its functions.
8. Mechanism of enzyme action.

III. Short Answers on : (10X3=30)

1. Urinary bladder.
2. Intercostal muscles.
3. Pericardial sinuses.
4. Bronchial tree.
5. Blood groups.
6. Valsalva manoeuvre.
7. Henderson-Hasselbach equation.
8. Primary structure of proteins.
9. Balanced diet.
10. Antigen antibody types.

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

[AHS 0423]

APRIL 2023

Sub. Code: 1508

B.Sc. CARDIAC TECHNOLOGY
FIRST YEAR (Regulations 2014-2015, 2018-2019 & 2021-2022 onwards)
PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY
RELATED TO CARDIAC TECHNOLOGY

Q. P. Code: 801508

Time: Three hours

Maximum : 100 Marks

Answer ALL Questions

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

1. Describe in detail about the blood supply of the heart. Add a note on its Applied Anatomy.
2. Define Cardiac Output. Describe in detail about the factors regulating the cardiac output.
3. What are the biochemical functions of Calcium in our body? Elaborate on how plasma calcium level is maintained.

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

1. Bronchopulmonary segments.
2. Coverings of the Heart.
3. Structure and functions of Nephron.
4. Pleura.
5. Role of kidneys in acid base regulation.
6. Biochemical functions of Vitamin A.
7. Immunoglobulins.
8. Describe the intrinsic pathway of Clotting.

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

1. Draw the diagram of Scapula and name its parts.
2. Atrioventricular node.
3. Colloidal Osmotic Pressure.
4. Cartilages of the larynx.
5. Essential Hypertension.
6. Valsalva manoeuvre.
7. Name the physiological buffers in our body. Also mention the predominant buffer system in plasma.
8. Landsteiner's law.
9. Competitive inhibition with an example.
10. Write the normal reference values of
 - i) Thyroid Stimulating Hormone
 - ii) Blood pH
 - iii) Fasting blood glucose.

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

[AHS 1123]

NOVEMBER 2023

Sub. Code: 1508

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR (Regulations 2014-2015, 2018-2019, 2020-2021 & 2021-2022 onwards)

PAPER I – APPLIED ANATOMY, PHYSIOLOGY AND BIO-CHEMISTRY

RELATED TO CARDIAC TECHNOLOGY

Q. P. Code: 801508

Time: Three hours

Maximum : 100 Marks

Answer ALL Questions

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

1. Explain the two main mechanisms that Control Blood Pressure.
2. Describe the circulation of the blood through the Lungs. Name the main vessels involved.
3. Write a detailed note on Lipoprotein in Atherosclerosis.

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

1. Blood supply of Heart.
2. Systolic and diastolic Blood Pressure.
3. Structure of Nephrons.
4. Cartilages.
5. Oxygen transport in the blood.
6. Muscle of Respiration.
7. Classification of Aminoacids.
8. Describe regulation, characteristics and general functions of WBCs.

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

1. Structure associated with the Pharynx.
2. Thyroid cartilage.
3. Types of Blood vessels.
4. Erythrocytes.
5. Diffusion.
6. Plasma protein.
7. Functions of Glucocorticoids.
8. Lobes of right and left lung.
9. Functions of Fatty acids.
10. Functions of Veins.
