

September-2002

[KH 124]

Sub. Code : 2021

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch V — Physiology

Paper II — CIRCULATION, RESPIRATION,
EXCRETION AND ENVIRONMENTAL PHYSIOLOGY

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

Draw diagrams wherever necessary

1. Describe various methods of measurement of the cardiac output. (25)
 2. Describe factors which regulate sodium reabsorption in renal tubules. (25)
 3. Write briefly on : (5 × 10 = 50)
 - (a) Pacemaker potentials
 - (b) Mountain sickness
 - (c) Natriuretic peptides
 - (d) Surfactant
 - (e) 2, 3 Diphosphoglycerate.
-

[KP 124]

Sub. Code : 2021

M.D. DEGREE EXAMINATION.

Branch V — Physiology

Paper II — CIRCULATION, RESPIRATION,
ENVIRONMENTAL PHYSIOLOGY AND EXCRETION

Time : Three hours Maximum : 100 marks

Theory : Two hours and Theory : 80 marks
forty minutes

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay :

(1) Define acidosis and alkalosis. Explain the role of blood, kidneys and lungs in the regulation of pH of blood. (20)

(2) Explain the mechanism of genesis of hemorrhagic shock : Write in detail the normal compensatory mechanism. (15)

(3) Describe in detail the conducting system in the heart. (15)

II. Write short notes on : (6 × 5 = 30)

(a) Role of urea in Medullary osmotic gradient.

(b) Structure-function relationship in proximal convoluted tubules.

(c) 2, 3 DPG in oxy Hemoglobin dissociation curve.

(d) Explanation of E.C.G changes following Myocardial infarction.

(e) Brown fat.

(f) Urinary Bladder following complete spinal Transection.

[KQ 121]

Sub. Code : 2021

M.D. DEGREE EXAMINATION.

Branch V — Physiology

CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY AND EXCRETION

Common to :

Paper II — (Old/New/Revised Regulations)
(Candidates admitted from 1988–89 onwards)

And

Paper II — (For candidates admitted from 2004–05
onwards)

Time : Three hours Maximum : 100 marks

Theory : Two hours and Theory : 80 marks
forty minutes

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay :

1. Discuss the role of cardiovascular baroreceptors in
the short-term regulation of blood pressure. (20)

2. Describe the mechanism and regulation of
surfactant synthesis in lungs and explain the role of
surfactant in mechanics of breathing. (15)

3. Discuss the importance of tubuloglomerular
feedback in the regulation of kidney functions. (15)

II. Write short notes on : (6 × 5 = 30)

(a) Acute mountain sickness.

(b) Left ventricular pressure-volume loop in
systolic and diastolic dysfunctions.

(c) Role of glomerular mesangial cells in
glomerular filtration.

(d) Effects of sympathetic and parasympathetic
stimulation on pacemaker potential.

(e) Medullary central pattern generator for
respiration.

(f) Application of Bernoulli's principle in
dynamics of blood flow.

MARCH 2008

[KS 122]

Sub. Code : 2019

M.D. DEGREE EXAMINATION.

Branch V — Physiology

Paper II — CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION

(Common to all candidates)

Q.P. Code : 202019

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

Draw diagram wherever necessary.

- I. Essay Questions : (2 × 20 = 40)
 1. Describe the mechanisms of control of the cardio vascular system. (20)
 2. Describe the cardio - respiratory changes during exercise. (20)
 - II. Write Short notes on : (10 × 6 = 60)
 1. Law of Laplace and its physiological applications
 2. Juxtaglomerular feedback
 3. The role of counter - current mechanism in producing hypertonic and hypotonic urine
 4. Renal handling of H⁺ secretion
 5. Compensatory mechanism of shock
 6. Carotid chemoreceptors
 7. Effects of gravity on cardiovascular system
 8. Oxygen therapy
 9. High pressure nervous syndrome
 10. Pathophysiology of asthma.
-

September 2008

[KT 122]

Sub. Code: 2019

M.D. DEGREE EXAMINATION

Branch V – Physiology

**Paper II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY
AND EXCRETION**

(Common to all candidates)

Q.P. Code : 202019

Time : Three hours

maximum : 100 marks

Draw suitable diagram wherever necessary.

Answer ALL questions.

I. Essay questions :

(2 X 20 = 40)

1. “Hypertension is a syndrome not a disease”. Discuss.
2. Explain elaboratively regulation of respiration – various mechanisms involved.

II. Write short notes on :

(10 X 6 = 60)

1. Cardiac cycle.
 2. Counter current mechanism.
 3. Hypoxia.
 4. SCUBA
 5. Respiratory distress syndrome.
 6. ECG.
 7. Renin Angiotension system.
 8. Atonic bladder
 9. Heart Sounds.
 10. GFR
-

March 2009

[KU 122]

Sub. Code: 2019

M.D. DEGREE EXAMINATION

Branch V – PHYSIOLOGY
(Common to all candidates)

**Paper II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY
AND EXCRETION**

Q.P. Code : 202019

Time : Three hours

Maximum : 100 marks

Draw suitable diagram wherever necessary.

Answer ALL questions.

I. Essay questions :

(2 x 20 = 40)

1. Discuss the renal control of Acid-base balance.
2. Explain elaboratively the regulation of arterial blood pressure.

II. Write short notes on :

(10 x 6 = 60)

1. CHEMORECEPTORS.
2. Pulmonary function tests.
3. Periodic breathing.
4. Ventilation perfusion ratio.
5. Cardio respiratory changes during exercise.
6. Oedema.
7. Poiseuilles law.
8. Endocrine functions of kidney.
9. Cystometrogram.
10. Osmotic diuresis.

March 2010

[KW 122]

Sub. Code: 2019

M.D. DEGREE EXAMINATION

**Branch V – PHYSIOLOGY
(Common to all candidates)**

**Paper II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY
AND EXCRETION
*Q.P. Code : 202019***

Time : Three hours

Maximum : 100 marks

Draw suitable diagram wherever necessary.

Answer ALL questions.

I. Essay questions : (2 x 20 = 40)

1. Discuss the pathophysiology of circulatory shock.
2. Explain in detail the renal tubular functions with experimental evidences.

II. Write short notes on : (10 x 6 = 60)

1. Renal buffers.
2. Micturition reflex.
3. Renal clearance values.
4. Glomerular filtration.
5. Hypoxia.
6. Timed – vital capacity.
7. Cardiac arrhythmias.
8. Coronary blood flow.
9. Conducting system of heart.
10. Mechanics of respiration.

September 2010

[KX 122]

Sub. Code: 2019

M.D. DEGREE EXAMINATION

Branch V – Physiology

**Paper II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

(Common to all candidates)

Q.P. Code : 202019

Time : Three hours

Maximum : 100 marks

**Draw suitable diagram wherever necessary.
Answer ALL questions.**

I. Essay questions : (2 X 20 = 40)

1. Define stroke volume, Cardiac output and cardiac index. Discuss the role of Starling's law in influencing Cardiac output.
2. Explain the mechanism of Osmoreceptor system and its importance in the regulation of total concentration of solutes in the extra cellular fluids.

II. Write short notes on : (10 X 6 = 60)

1. Micturition reflex.
2. Cardiovascular reflexes associated with the Sino aortic area.
3. Siggard Anderson Curve Nomogram.
4. How does respiratory system regulate H⁺ ion concentration?
5. Discuss the comparative physiology of the kidney of vertebrates.
6. Glomerulo-tubular balance.
7. Pathophysiology of edema.
8. Endocrine function of the kidney.
9. Explain the role of aldosterone in the control of body fluid electrolytes.
10. Esophageal Lead.

MAY 2011

[KY 122]

Sub. Code: 2019

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY
CIRCULATION, RESPIRATION, ENVIRONMENTAL PHYSIOLOGY,
COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code : 202019

**Time : 3 hours
(180 Min)**

Maximum : 100 marks

Answer ALL questions in the same order.

| | Pages (Max.) | Time (Max.) | Marks (Max.) |
|--|-------------------------|------------------------|-------------------------|
| I. Essay: | | | |
| 1. Define cardiac output. Explain the factors that regulate cardiac output. | 6 | 15 | 10 |
| 2. Role of kidney on tonicity and volume of ECF. | 6 | 15 | 10 |
| II. Short Questions: | | | |
| 1. Conducting system of the heart. | 3 | 8 | 5 |
| 2. CVS changes during moderate exercise. | 3 | 8 | 5 |
| 3. PR interval. | 3 | 8 | 5 |
| 4. Triple response of Lewis. | 3 | 8 | 5 |
| 5. Cystometrogram. | 3 | 8 | 5 |
| 6. Artificial kidney. | 3 | 8 | 5 |
| 7. Non respiratory functions of lung. | 3 | 8 | 5 |
| 8. Dead space and its importance. | 3 | 8 | 5 |
| III. Reasoning Out: | | | |
| 1. Explain the reason for edema in Nephrotic syndrome. | 4 | 10 | 5 |
| 2. Effects of positive "G". | 4 | 10 | 5 |
| 3. Give your reason for the rise in blood pressure in old age. | 4 | 10 | 5 |
| 4. A 55 year old man with a past history of Myocardial Infarction fainted lifting a heavy packing case. Explain. | 4 | 10 | 5 |
| IV. Very Short Answers : | | | |
| 1. Define counter current mechanism. Mention two sites where counter current mechanism is present. | 1 | 4 | 2 |
| 2. Heat cramps. | 1 | 4 | 2 |
| 3. Name the nerve of emptying and the nerve of filling in the urinary bladder. | 1 | 4 | 2 |
| 4. Mention any four non respiratory functions of lungs. | 1 | 4 | 2 |
| 5. Cheyne stokes breathing. | 1 | 4 | 2 |
| 6. Cyanosis. | 1 | 4 | 2 |
| 7. Valsalva maneuver. | 1 | 4 | 2 |
| 8. Monroe Kellie doctrine. | 1 | 4 | 2 |
| 9. What do you mean by end diastolic volume? Mention two factors that influence End diastolic volume. | 1 | 4 | 2 |
| 10. What is meant by baroreceptor resetting? | 1 | 4 | 2 |

October 2011

[KZ 122]

Sub. Code: 2019

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

CIRCULATION, RESPIRATION, ENVIRONMENTAL PHYSIOLOGY,
COMPARATIVE PHYSIOLOGY AND EXCRETION

Q.P. Code : 202019

Time : 3 hours
(180 Min)

Maximum : 100 marks

Answer ALL questions in the same order.

I. Essay :

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

- | | | | |
|--|---|----|----|
| 1. Describe the importance of tubuloglomerular feed back in the regulation of Kidney function. | 6 | 15 | 10 |
| 2. Explain the role of surfactant in mechanism of breathing and regulation of surfactant. | 6 | 15 | 10 |

II. Short Questions:

- | | | | |
|---|---|---|---|
| 1. Effect of electrolyte abnormalities on heart. | 3 | 8 | 5 |
| 2. Ventilation – Perfusion imbalance. | 3 | 8 | 5 |
| 3. Diuretics. | 3 | 8 | 5 |
| 4. Ventilatory response to acid base balance. | 3 | 8 | 5 |
| 5. Measurement of FRC. | 3 | 8 | 5 |
| 6. Acute effect of high altitude and acclimatization to altitude. | 3 | 8 | 5 |
| 7. Non respiratory functions of lungs. | 3 | 8 | 5 |
| 8. Brown fat. | 3 | 8 | 5 |

III. Reasoning Out:

- | | | | |
|---|---|----|---|
| 1. Hypoxia generate increased number of impulses in the afferent nerves from the carotid chemo receptors. | 4 | 10 | 5 |
| 2. ECG changes following myocardial infarction. | 4 | 10 | 5 |
| 3. Application of bernoullis principle in dynamic of blood flow. | 4 | 10 | 5 |
| 4. Deep sea divers prefer O ₂ Helium mixture for underwater breathing. | 4 | 10 | 5 |

IV. Very Short Answers :

- | | | | |
|---|---|---|---|
| 1. Cardiac reserve. | 1 | 4 | 2 |
| 2. Low resistance shock. | 1 | 4 | 2 |
| 3. Cardio pulmonary receptors. | 1 | 4 | 2 |
| 4. Effect of Zero gravity state. | 1 | 4 | 2 |
| 5. Hyper thermia. | 1 | 4 | 2 |
| 6. High pressure nervous syndrome. | 1 | 4 | 2 |
| 7. Urinary bladder dysfunction. | 1 | 4 | 2 |
| 8. Physiology of Ist breath in newborn. | 1 | 4 | 2 |
| 9. Hyper baric oxygen therapy. | 1 | 4 | 2 |
| 10. Breath holding. | 1 | 4 | 2 |

April 2012

[LA 122]

Sub. Code: 2019

M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY
PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION
Q.P. Code : 202019

Time : 3 hours
(180 Min)

Maximum : 100 marks

Answer ALL questions in the same order.

| | Pages | Time | Marks |
|---|---------------|---------------|---------------|
| | (Max.) | (Max.) | (Max.) |
| I. Essay: | | | |
| 1. Describe the various tests employed to evaluate the functions of kidney. | 9 | 15 | 10 |
| 2. Describe in detail about the methods of measurement of cardiac output and the factors regulating it. | 9 | 15 | 10 |
| II. Short Questions: | | | |
| 1. Write about the formation and functions of surfactant. | 3 | 8 | 5 |
| 2. Discuss the cardiopulmonary changes during exercise. | 3 | 8 | 5 |
| 3. What are the effects of high altitude? | 3 | 8 | 5 |
| 4. Discuss the methods of measuring renal blood flow. | 3 | 8 | 5 |
| 5. Discuss about cystometrogram. | 3 | 8 | 5 |
| 6. Write about the secretion and functions of endothelins. | 3 | 8 | 5 |
| 7. Discuss about Stokes Adam Syndrome. | 3 | 8 | 5 |
| 8. Discuss about the secretion and functions of natriuretic peptide. | 3 | 8 | 5 |
| III. Reasoning Out: | | | |
| 1. There is linear increase in pulmonary blood flow from the apices to the base of the lungs | 5 | 10 | 5 |
| 2. When V_a/Q ratio becomes infinite? Explain | 5 | 10 | 5 |
| 3. Salt restricted diet and diuretics in hypertension. Discuss the physiological principle? | 5 | 10 | 5 |
| 4. High protein diet increases the ability of the kidneys to concentrate urine | 5 | 10 | 5 |
| IV. Very Short Answers: | | | |
| 1. What is the cause for decompression sickness? | 1 | 4 | 2 |
| 2. Write the clinical significance of P-R interval. | 1 | 4 | 2 |
| 3. What is Bainbridge reflex? | 1 | 4 | 2 |
| 4. What is Cushing's reflex? | 1 | 4 | 2 |
| 5. What is His bundle electrogram? | 1 | 4 | 2 |
| 6. What is free water clearance? | 1 | 4 | 2 |
| 7. What is dialysis and its indications? | 1 | 4 | 2 |
| 8. Define Goldblatt hypertension | 1 | 4 | 2 |
| 9. What is meant by calcium rigor? | 1 | 4 | 2 |
| 10. What is Valsalva's and Muller's manouvre? | 1 | 4 | 2 |

[LB 122]

OCTOBER 2012

Sub. Code: 2019

M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY

PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION

Q.P. Code : 202019

Time : 3 hours
(180 Min)

Maximum : 100 marks

Answer ALL questions in the same order.

| | Pages (Max.) | Time (Max.) | Marks (Max.) |
|--|-----------------|----------------|-----------------|
| I. Essay: | | | |
| 1. Discuss the regulation of extracellular fluid osmolarity and sodium concentration. | 9 | 15 | 10 |
| 2. Discuss the mechanism of formation and functions of surfactant. | 9 | 15 | 10 |
| II. Short Questions: | | | |
| 1. Discuss the law of Laplace as it relates to pulmonary and cardiovascular functions. | 3 | 8 | 5 |
| 2. Discuss the effects of zero gravity. | 3 | 8 | 5 |
| 3. Explain the role of urea in the formation of concentrated Urine. | 3 | 8 | 5 |
| 4. Explain the rapid control of arterial blood pressure. | 3 | 8 | 5 |
| 5. Discuss the renal control of acid base balance. | 3 | 8 | 5 |
| 6. Explain the Oxygen – Hemoglobin Dissociation Curve. | 3 | 8 | 5 |
| 7. Explain the volume pressure changes during cardiac cycle. | 3 | 8 | 5 |
| 8. Describe the neural regulation of respiration. | 3 | 8 | 5 |
| III. Reasoning Out: | | | |
| 1. Ventricular fibrillation is dangerous than atrial fibrillation. | 5 | 10 | 5 |
| 2. Person on low sodium diet develops hypokalemia. | 5 | 10 | 5 |
| 3. Bradycardia in athletes is physiological. | 5 | 10 | 5 |
| 4. The blood volume remains almost exactly constant in spite of extreme changes in fluid intake. | 5 | 10 | 5 |
| IV. Very Short Answers: | | | |
| 1. What is cardiac reserve? | 1 | 4 | 2 |
| 2. What is oxygen toxicity? | 1 | 4 | 2 |
| 3. What is maximal voluntary ventilation? Give the normal value. | 1 | 4 | 2 |
| 4. What is Goldblatt hypertension? | 1 | 4 | 2 |
| 5. What are the functions of juxta glomerular cells? | 1 | 4 | 2 |
| 6. What is SIADH? | 1 | 4 | 2 |
| 7. What is Cardiogenic shock? | 1 | 4 | 2 |
| 8. What is active and reactive hyperemia? | 1 | 4 | 2 |
| 9. Write about abnormal bladder. | 1 | 4 | 2 |
| 10. Write any two causes for ectopic beats. | 1 | 4 | 2 |

(LC 122)

APRIL 2013

Sub. Code: 2019

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY**

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code : 202019

Time: Three Hours

Maximum: 100 marks

I. Essay:

(2X10=20)

1. Discuss briefly the short term regulation of Blood pressure and add a note on Orthostatic hypotension.
2. Discuss the mechanism by which oxygen flows “downhill” from the lungs to the tissues. Add a note on oxygen therapy.

II. Short Questions:

(8X5=40)

1. Endothelium derived relaxing factor.
2. ECG changes during Electrolyte imbalance.
3. Peculiar features of Cerebral circulation.
4. Starling forces.
5. Dysbarism.
6. Oxygen debt mechanism.
7. Physiology of filling of Bladder.
8. Osmotic Diuresis

III. Reasoning Out:

(4X5=20)

1. Maximum coronary flow occurs during isovolumetric phase of cardiac cycle.
2. Packed cell volume of venous blood is higher than arterial blood.
3. Splay in Glucose titration curve.
4. Deep sea diver prefers Helium- oxygen mixture for underwater sea breathing.

IV. Very Short Answers:

(10X2=20)

1. Name the internodal tracts within the atrium in conduction system of the heart.
2. What is the physiological significance of ‘J’ point in ECG?
3. What is the effect of gravity on blood pressure ?
4. Define critical closing Pressure and its importance.
5. What is Dyspneic Index? What is the physiological importance?
6. Physiology of first breath in newborn.
7. Write the peculiar features of renal circulation.
8. What is Anion Gap? What are the conditions altering it?
9. What is Automatic Bladder?
10. Write the WHO classification of grading the Exercise.

[LD 122]

OCTOBER 2013

Sub. Code: 2019

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code : 202019

Time: Three Hours

Maximum: 100 marks

I. Essay:

(2 x 10 = 20)

1. Define shock. What is the pathophysiology of the different types of shock? Describe the compensatory mechanisms involved in correction of hemorrhagic shock.
2. Describe the mechanisms which enable a mammal to excrete concentrated urine.

II. Short Questions:

(8 x 5 = 40)

1. Describe the rhythm generating mechanisms in the mammalian heart that are responsible for the pace-maker action potential.
2. Describe the Windkessel effect of aorta. What happens to pulse pressure if this effect is diminished by disease processes?
3. What is the difference in arterial blood gas profile in type I versus type II respiratory failure? What are the pathophysiological phenomena leading to each of the two types of respiratory failure and why?
4. Describe the effects of carbon monoxide poisoning. Discuss real life situations in which CO poisoning can occur. How can it be treated?
5. What are chemoreceptors? Where are the ones that regulate respiration located? How do they bring about changes in respiration?
6. Describe the sodium transport processes in different segments of the nephron.
7. Describe the factors which regulate potassium excretion in the distal tubule.
8. List the differences that you know of, between the amphibian heart and the mammalian heart.

III. Reasoning Out:

(4 x 5 = 20)

1. Rapid infusion of saline to an anesthetized dog resulted in tachycardia. Give reasons for the same.
2. Justify the following statement: 'Surfactant keeps the lungs dry'.

[PTO]

3. The electrolyte and arterial blood gas profile in a patient is as follows:
Sodium – 140 mmol/L, potassium – 4 mmol/L, Chloride 102 mmol/L, Bicarbonate – 35 mmol/L, pH – 7.47, PCO₂ – 50 mm Hg. Identify the abnormal values in this list and state what the condition is termed as clinically.
4. In an experimental animal, changes in mean arterial pressure in the range 80 mm Hg to 110 mm Hg, does not alter glomerular filtration rate. Why? Explain the mechanisms involved.

IV. Very Short Answers:

(10 x 2 = 20)

1. What are Ryanodine receptors?
2. Calculate the mean arterial pressure of a subject whose blood pressure record reads 130/70 mmHg.
3. Calculate cardiac output from the following data: Heart rate = 72 beats per minute; Echocardiogram data: End diastolic volume=120 ml; End-systolic volume=50 ml.
4. State Starling's law of the heart.
5. List two pulmonary function tests that can distinguish between obstructive versus restrictive lung diseases and state how.
6. List the normal partial pressures of oxygen in (a) atmosphere (b) alveolus (c) arteries (d) mixed venous blood at rest.
7. Two individuals A and B have hemoglobin concentrations as 15g/dL and 10 g/dL respectively. If they are similar in all other respects, compare arterial PO₂ in A and B and give reasons for your answer.
8. What is 'inulin clearance' indicative of and why?
9. What are the components of juxtaglomerular apparatus?
10. Which membrane transporters are targets of the following drugs: Frusemide; digoxin.

[LE 122]

APRIL 2014

Sub. Code: 2019

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY
PAPER II –CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION
Q.P. Code :202019**

Time : Three hours

Maximum : 100 marks

I. Essay: (2X10=20)

1. What is the normal coronary blood flow? Discuss the various factors that determine coronary blood flow.
2. Discuss the various factors involved in chemical regulation of respiration.

II. Short Questions: (8X5=40)

1. Abnormal pacemakers of the heart.
2. Axon reflex.
3. Hypoxic hypoxia.
4. Acid – base nomogram.
5. Tubular transport maximum.
6. Significance of lead II in ECG.
7. Sympathetic vasodilator system.
8. Distributive shock.

III. Reasoning Out: (4X5=20)

1. Reason for 'C' wave in the record of jugular pressure.
2. Hyperkalemia has a potentially lethal effect on heart. why?
3. Why the pressure – volume curve during quiet respiration is a hysteresis loop and not as straight line?
4. A high – protein diet increases glomerular filtration rate. Why?

IV. Very Short Questions: (10X2=20)

1. What is long QT syndrome?
2. What is the significance of oculocardiac reflex?
3. What is reactive hyperemia?
4. What is FEV1? What is its significance?
5. What is T-R configuration? What is its significance?
6. What is the role of pre – Bottzinger complex on respiration?
7. What is the effect of hypoxia on pulmonary vasculature and why?
8. What is renorenal reflex?
9. What is water intoxication?
10. Write 'The Hendersan – Hasselbach Equation'.

[LF 122]

OCTOBER 2014

Sub. Code: 2019

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY**

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code :202019

Time : Three Hours

Maximum : 100 marks

I. Essay:

(2 x 10 = 20)

1. Explain the properties of Cardiac muscle fibre.
2. Mention the pulmonary function tests useful in assessing the diagnosis and prognosis of a lung disease.

II. Short Questions:

(8 x 5 = 40)

1. Autoregulation of blood flow.
2. Traube Hering waves.
3. Radionucleotide Scanning in evaluating cardiac function.
4. What are the factors influencing stability of alveoli?
5. Write a note on Tamm Horsfall proteins.
6. Stop flow Technique.
7. Respiratory responses to Exercise.
8. Write a note on Asphyxia.

III. Reasoning Out:

(4 x 5 = 20)

1. Persistent cough decreases venous return to heart.
2. Breathing pure oxygen at high pressure leads to failure of buffer system in the body.
3. Thin walled, delicate capillaries are less prone to rupture.
4. Proximal Convolute Tubules have a high rate of oxygen consumption.

IV. Very Short Questions:

(10 x 2 = 20)

1. What is Cushing's Reflex?
2. What is Fick's principle?
3. What do you mean by Cytopenia?
4. What do you mean by Diffusion Capacity of Lung?
5. What is Alkaline Reserve?
6. Define Plasma Clearance.
7. Malignant Hyperthermia.
8. Define Cardiac Cycle.
9. Obligatory reabsorption of water.
10. Starling's forces

[LG 122]

APRIL 2015

Sub. Code: 2019

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code : 202019

Time: Three Hours

Maximum: 100 marks

Answer ALL questions

I. Essay:

(2 x 10 = 20)

1. Write an essay on carbondioxide transport. What is Haldane effect?
2. Describe in detail the role of kidney in acid base balance. Add a note on postprandial alkaline tide.

II. Short Questions:

(8 x 5 = 40)

1. Pacemaker potentials.
2. Respiratory centres.
3. Gravitational (G) forces.
4. Abnormal bladders.
5. Vasarecta.
6. Cardiac reserve.
7. Acute mountain sickness.
8. Hypovolemic shock.

III. Reasoning Out:

(4 x 5 = 20)

1. High protein diet increases Glomerular Filtration Rate (GFR).
2. Reason for Atrioventricular (AV) nodal delay.
3. Peripheral oedema in cardiac failure.
4. Deep sea divers prefer helium oxygen mixture.

IV. Very Short Answers:

(10 x 2 = 20)

1. 2,3 Diphosphoglycerate.
2. Phonocardiogram.
3. Brown fat.
4. Micropuncture technique.
5. Bernoulli's principle.
6. Methods to measure cardiac output.
7. Hering Breuer inflation reflex.
8. Dent's disease.
9. Valsalva maneuver.
10. Goldblatt hypertension.

[LI 122]

APRIL 2016

Sub. Code: 2019

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY**

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL PHYSIOLOGY,
COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code :202019

Time : Three Hours

Maximum : 100 Marks

I. Essay:

(2 x 10 = 20)

1. Describe in detail the role of kidney in acid base balance. Add a note on postprandial alkaline tide.
2. How is heart rate regulated? What is sinus arrhythmia?

II. Short Questions:

(8 x 5 = 40)

1. Functional residual capacity.
2. Gravitational (G) forces.
3. End diastolic volume.
4. Triple response of Lewis.
5. Natriuretic peptides.
6. Acute mountain sickness.
7. Law of Laplace and its physiological applications.
8. Non respiratory functions of lungs.

III. Reasoning Out:

(4 x 5 = 20)

1. High protein intake increases Glomerular Filtration Rate.
2. The nerves from the baroreceptors are called buffer nerves.
3. Reason for AV nodal delay.
4. Peripheral oedema in cardiac failure.

IV. Very Short Questions:

(10 x 2 = 20)

1. Surfactant.
2. Phonocardiogram.
3. Atonic bladder.
4. Biot's breathing.
5. Osmotic diuresis.
6. Creatinine clearance.
7. Physiological Dead space.
8. Stokes Adams Syndrome.
9. Oxygen therapy.
10. Self contained underwater breathing apparatus (SCUBA).

[LJ 122]

OCTOBER 2016

Sub. Code: 2019

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY**

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL PHYSIOLOGY,
COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code :202019

Time : Three Hours

Maximum : 100 Marks

I. Essay:

(2 x 10 = 20)

1. Describe the control of ECF volume and its Sodium concentration by the kidney and thirst mechanism. Add a note on water diuresis.
2. Discuss about the neural regulation of respiration. Add a note on effects of transaxation at various levels of respiratory centre.

II. Short Questions:

(8 x 5 = 40)

1. Significance of P_{50} in ODC.
2. Ionic basis of Ventricular muscle AP.
3. Heart sounds and murmur.
4. Factors influencing VMC.
5. Diuretics and their mechanism of action.
6. Regulation of Cardiac Output.
7. Acclimatization.
8. Features of Cerebral circulation.

III. Reasoning Out:

(4 x 5 = 20)

1. Relief of Orthopnoea in sitting posture.
2. Regular exercise is of benefit to patients with heart disease. How?
3. Hyperventilation is associated with Alkaline urine.
4. Body of a patient in shock should not be covered with blanket.

IV. Very Short Questions:

(10 x 2 = 20)

1. Isohydric Principle.
2. Anion Gap.
3. What is Ectopic Pacemaker?
4. Significance of JVP.
5. Corrected QT interval.
6. What is subvalvular apparatus?
7. What is Utilization Coefficient?
8. Waterfall effect on perfusion of lung.
9. Intrapleural and intrapulmonal pressure.
10. Define clearance.

[LK 122]

MAY 2017

Sub. Code: 2019

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY**

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL PHYSIOLOGY,
COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code :202019

Time : Three Hours

Maximum : 100 Marks

I. Essay:

(2 x 10 = 20)

1. How is heart rate regulated? What is sinus arrhythmia?
2. Describe in detail the formation of urine?

II. Short Questions:

(8 x 5 = 40)

1. Renal buffers.
2. Timed vital capacity.
3. Diuretics.
4. High pressure nervous syndrome.
5. Micropuncture technique.
6. Periodic breathing.
7. Baroreceptor resetting.
8. Cor pulmonale.

III. Reasoning Out:

(4 x 5 = 20)

1. Oxygen dissociation curve is sigmoid shaped.
2. During old age there is rise in blood pressure.
3. Micturition reflex is a self regenerative reflex.
4. Osteomalacia in chronic renal failure.

IV. Very Short Questions:

(10 x 2 = 20)

1. Triple response of Lewis.
2. Glomerulotubular balance.
3. Low resistance shock.
4. Physiological role of Nitric oxide (NO).
5. Self contained underwater breathing apparatus (SCUBA).
6. Free water clearance.
7. Physiological Dead space.
8. Positive end-expiratory pressure (PEEP).
9. Pink buffers and blue bloaters.
10. Breath holding.

[LL 122]

OCTOBER 2017

Sub. Code: 2019

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY**

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL PHYSIOLOGY,
COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code :202019

Time : Three Hours

Maximum : 100 Marks

I. Essay:

(2 x 10 = 20)

1. Write an essay on Mechanics of Breathing. Add a note on Respiratory Distress syndrome.
2. Describe in detail the various events along with the pressure volume changes during a cardiac cycle.

II. Short Questions:

(8 x 5 = 40)

1. Carbondioxide transport in the blood.
2. Sleep Apnea.
3. Cardio pulmonary changes during Exercise.
4. Poiseuille's Law.
5. Venous Return.
6. Sino Aortic Reflex.
7. Renal Autoregulation.
8. Role of Kidney in calcium homeostasis.

III. Reasoning Out:

(4 x 5 = 20)

1. Digitalis improves cardiac contractility.
2. Demeclocycline, an antibiotic, is useful in treating patients with Inappropriate Hypersecretion of Vasopressin. Give Reason.
3. Baroreceptors usually do not contribute for the Long term Regulation of Blood Pressure.
4. Salt restriction and diuretics are recommended in Hypertension.

IV. Very Short Questions:

(10 x 2 = 20)

1. Timed Vital Capacity.
2. Hering – Breuer Reflex.
3. Vagal Tone.
4. Vasomotor waves.
5. Factors influencing the Lymph flow.
6. Obligatory Urine Volume.
7. Limiting PH.
8. Renal Threshold for Glucose.
9. Orthostatic albuminuria.
10. Renal or Goldblatt Hypertension.

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code :202019

Time : Three Hours

Maximum : 100 Marks

I. Essay Questions:

(2 x 15 = 30)

1. Describe in detail the role of kidney in acid base balance. Add a note on anion gap.
2. Physiological effects of deep sea diving. Add a note on carbon-dioxide toxicity.

II. Short notes:

(10 x 5 = 50)

1. Natriuretic peptides.
2. Integrated response to haemorrhage.
3. Structures of microcirculation.
4. Cardiac and vascular function curves.
5. Short term regulation of blood pressure.
6. The cardio pulmonary changes during exercise.
7. Flow volume curves.
8. Measurement of functional residual capacity of the lungs.
9. Oxygen transport.
10. The effects of zero gravity.

III. Reasoning Out:

(4 x 5 = 20)

1. Proximal convoluted tubules have a high rate of oxygen consumption.
2. Bradycardia in athletes is physiological.
3. When ventilation perfusion ratio becomes infinite?
4. Ventricular fibrillation is dangerous than atrial fibrillation.

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY**

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code: 202019

Time : Three Hours

Maximum : 100 Marks

I. Essay Questions:

(2 x 15 = 30)

1. a) Explain how electrical activity is spontaneously generated and conducted within the heart?
b) Compare ventricular action potential and pacemaker Potential.
c) What is artificial pacemaker?
2. a) Describe the neural and b) chemical control of respiration.
c) What is pre-Botzinger complex?
d) Explain the control of breathing during breath holding.

II. Short notes:

(10 x 5 = 50)

1. Special features of Renal circulation.
2. Significance of plateau portion of oxy haemoglobin dissociation curve.
3. Decompression sickness.
4. Lung compliance.
5. Role of Kidney in regulating pH of body fluids.
6. The 'Last ditch stand' Arterial pressure control mechanism.
7. Tubular maximum for glucose TmG.
8. Mechanism of sweat secretion.
9. Juxta Glomerular Complex.
10. Micturition reflex.

III. Reasoning Out:

(4 x 5 = 20)

1. The pressure gradient in the pulmonary circulatory system is much less than that in the systemic circulation.
2. Subendocardial portion of left ventricle is the most common site of Myocardial infarction.
3. Body fluids are good conductors of electricity.
4. Recirculation of urea contributes to medullary hyperosmolarity.

M.D. DEGREE EXAMINATION**BRANCH V – PHYSIOLOGY****PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION***Q.P. Code: 202019***Time : Three Hours****Maximum : 100 Marks****I. Essay Questions:****(2 x 15 = 30)**

1. Describe the various lung volumes and capacities. Add a note on measurement of anatomical dead space.
2. Define shock. What are the causes and stages of shock? Add a note on circulatory arrest.

II. Short notes:**(10 x 5 = 50)**

1. Renal tubular functions.
2. End stage renal disease.
3. Cystometrogram.
4. Describe diuretics and their mechanism of action.
5. Cardiac action potential.
6. Neural regulation of respiration.
7. Features of acclimatization to high altitudes.
8. Pacemaker and ectopic pacemaker.
9. The factors determining the diffusion capacity.
10. Circulatory adjustments at birth.

III. Reasoning Out:**(4 x 5 = 20)**

1. Hyperkalemia has a potential effect on heart. Explain.
2. Polycythemia in obstructive sleep apnoea.
3. Application of Bernoulli's principle in dynamic of blood flow.
4. Splay in Glucose titration curve.

**M.D. DEGREE EXAMINATION
BRANCH V – PHYSIOLOGY**

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code: 202019

Time : Three Hours

Maximum : 100 Marks

I. Essay Questions:

(2 x 15 = 30)

1. a) What are the effects of hydrostatic pressure gradients in the lungs on Regional pulmonary blood flow?
b) What are the effects of gravity on Ventilation and on ventilation perfusion ratio?
2. a) Explain the counter current multiplier mechanism.
b) What is the role of Vasa recta?
c) What would be the urine Osmolarity if a child was born with an ascending limb of Henle that was water permeable.

II. Short notes:

(10 x 5 = 50)

1. Regulation of renal blood flow.
2. Cheyne stokes respiration.
3. Nerve supply of urinary bladder.
4. Einthoven's triangle and Einthoven's law.
5. Factors causing turbulent blood flow.
6. Pressure buffer function of Baroreceptor control system.
7. Role of skin in temperature regulation.
8. Significance of FVC-Forced Vital Capacity and FEV –Forced Expiratory Volume.
9. Regulation of coronary blood flow.
10. Acute Mountain sickness.

III. Reasoning Out:

(4 x 5 = 20)

1. How are the excess Hydrogen ions secreted by renal tubular cells excreted?
2. Frank-Starling mechanism is independent of extrinsic nervous control.
3. Ventricular contraction and ejection are somewhat asynchronous.
4. Hering-Breuer reflex doesn't play any regulatory role in normal ventilation.

(MAY 2020 SESSION)

M.D. DEGREE EXAMINATION**BRANCH V – PHYSIOLOGY****PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION***Q.P. Code: 202019***Time : Three Hours****Maximum : 100 Marks****I. Essay Questions:****(2 x 15 = 30)**

1. (a) Define Blood pressure.
(b) Mention all the regulatory mechanisms of blood pressure.
(c) Describe in detail the short term regulation of blood pressure.
2. (a) Write in detail about regulation of respiration.
(b) Add a note on abnormal breathing.

II. Short notes:**(10 x 5 = 50)**

1. Renal handling of sodium.
2. Renal function tests.
3. Renal transplantation.
4. Acidification of urine.
5. Stokes Adam syndrome.
6. Left ventricular Pressure – Volume diagram.
7. Hemorrhagic shock.
8. Peculiarities of Pulmonary circulation.
9. High Pressure nervous syndrome.
10. Respiratory changes during exercise.

III. Reasoning Out:**(4 x 5 = 20)**

1. Dilated heart has to do more work than non-dilated heart.
2. Renal efferent arteriolar constriction has a biphasic effect on glomerular filtration rate.
3. Oxygen therapy is not of much use in anemic hypoxia. Reason out.
4. ACE inhibitor is contraindicated in hypertension due to renal artery stenosis. Reason out.

[LS 122]

NOVEMBER 2020
(OCTOBER 2020 SESSION)

Sub. Code: 2019

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code: 202019

Time : Three Hours

Maximum : 100 Marks

I. Essay Questions:

(2 x 15 = 30)

1. Describe the special features and factors regulating coronary circulation. Add a note on myocardial Infarction.
2. Define a buffer. Describe the various renal buffers. What is limiting pH?

II. Short notes:

(10 x 5 = 50)

1. Triple response.
2. Measurement of cardiac output.
3. Reynold's number.
4. Goldblatt hypertension.
5. Abnormal constituents of urine.
6. Artificial kidney.
7. Thermoregulatory centres.
8. Non-respiratory functions of lung.
9. Acclimatization to low PO₂.
10. Periodic breathing.

III. Reasoning Out:

(4 x 5 = 20)

1. Increase in GFR following a high protein meal.
2. Pressure gradient in pulmonary circulation is much less than that in systemic circulation.
3. Leakage in pressurized cabin leads to embolism.
4. Bradycardia in athletes.

[MD 0721]

JULY 2021
(MAY 2021 SESSION)

Sub. Code: 2019

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code: 202019

Time : Three Hours

Maximum : 100 Marks

I. Essay Questions:

(2 x 15 = 30)

1. (a) Define blood pressure.
(b) Mention all the regulatory mechanisms of blood pressure.
(c) Describe in detail the short term regulation of blood pressure.
2. (a) Write in detail about regulation of respiration.
(b) Add a note on abnormal breathing.

II. Short notes:

(10 x 5 = 50)

1. Renal handling of sodium.
2. Renal function tests.
3. Renal transplantation.
4. Acidification of urine.
5. Stokes adam syndrome.
6. Left ventricular pressure – volume diagram.
7. Hemorrhagic shock.
8. Peculiarities of pulmonary circulation.
9. High pressure nervous syndrome.
10. Respiratory changes during exercise.

III. Reasoning Out:

(4 x 5 = 20)

1. Dilated heart has to do more work than non-dilated heart.
2. Renal efferent arteriolar constriction has a biphasic effect on glomerular filtration rate.
3. Oxygen therapy is not of much use in anemic hypoxia. Reason out.
4. ACE inhibitor is contraindicated in hypertension due to renal artery stenosis. Reason out.

[MD 1121]

NOVEMBER 2021
(OCTOBER 2021 SESSION)

Sub. Code: 2019

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION

Q.P. Code: 202019

Time : Three Hours

Maximum : 100 Marks

I. Essay Questions:

(2 x 15 = 30)

1. Describe the various Pressure volume changes occurring during cardiac cycle using Wigger's diagram.
2. Describe in detail about the role of kidneys in acid base balance.

II. Short notes:

(10 x 5 = 50)

1. Compliance of lungs.
2. Artificial respiration.
3. Respiratory changes during exercise.
4. V_A/Q ratio.
5. Bernoulli's phenomenon and its clinical application.
6. Cerebral circulation.
7. ECG leads and waves.
8. Role of kidney in Potassium homeostasis.
9. Tubular maximum.
10. Micturition reflex.

III. Reasoning Out:

(4 x 5 = 20)

1. Give reasons for Physiological splitting of second heart sound during inspiration.
2. Coronary vessels undergo vasodilatation during exercise. Reason out.
3. Hypoxia causes vasodilatation in Pulmonary capillaries. Comment on this statement.
4. ACE inhibitor is contraindicated in hypertension due to renal artery stenosis. Reason out.

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

[MD 0522]

MAY 2022

Sub. Code: 2019

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code: 202019

Time : Three Hours

Maximum : 100 Marks

I. Essay Questions:

(2 x 15 = 30)

1. Describe the pressure and volume changes that occur during the cardiac cycle.
2. Describe the transport of oxygen from atmosphere to the tissues.

II. Short notes:

(10 x 5 = 50)

1. Tubulo glomerular feedback mechanism.
2. Urea transporters.
3. Transport maximum for (T_m) for glucose.
4. Set point for temperature control.
5. Mean QRS vector.
6. Influence of chemical factors on respiration.
7. Regulation of cerebral blood flow.
8. Circulatory changes during exercise.
9. Changes in lung volume, Alveolar pressure and pleural pressure during breathing.
10. The concept of physiologic shunt.

III. Reasoning Out:

(4 x 5 = 20)

1. The P_k value of phosphate buffer system is 6.8.
2. Subendocardial muscle frequently becomes infarcted.
3. Eddy currents are formed by turbulent blood flow.
4. Early distal tubule of the kidney is hypo-osmotic

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

[MD 1022]

OCTOBER 2022

Sub. Code: 2019

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code: 202019

Time : Three Hours

Maximum : 100 Marks

I. Essay Questions:

(2 x 15 = 30)

1. Describe the characteristic features and regulation of coronary blood flow. Add a note on cardio - biomarkers.
2. (a) Define Functional Residual Capacity (FRC).
(b) What is the significance of FRC?
(c) How can FRC be measured?

II. Short notes:

(10 x 5 = 50)

1. Work of breathing.
2. Septic shock.
3. Renal clearance tests.
4. Cerebral circulation.
5. Phases of ventricular action potential.
6. Artificial kidney.
7. Hyperbaric Oxygen therapy.
8. Reactive hyperemia.
9. Regulation of Glomerular filtration rate.
10. Periodic breathing.

III. Reasoning Out:

(4 x 5 = 20)

1. Physiological basis of heart sounds.
2. Reasons for the characteristic shape of Oxygen – Hemoglobin dissociation curve.
3. The amount of H⁺ secreted in the tubular fluid has a limit. Justify.
4. Physiological basis of Bainbridge reflex.

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

[MD 0723]

**JULY 2023
(MAY 2023 EXAM SESSION)**

Sub. Code: 2019

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

**PAPER II – CIRCULATION, RESPIRATION, ENVIRONMENTAL
PHYSIOLOGY, COMPARATIVE PHYSIOLOGY AND EXCRETION**

Q.P. Code: 202019

Time : Three Hours

Maximum : 100 Marks

I. Essay Questions:

(2 x 15 = 30)

1. Explain in detail about Neural Regulation of Respiration. Add a note on Ondine's Curse.
2. Define Glomerular Filtration Rate (GFR) and describe the factors influencing GFR.

II. Short notes:

(10 x 5 = 50)

1. Histotoxic hypoxia.
2. Compliance of Lungs.
3. Physiological dead space.
4. Factors influencing Heart Rate.
5. Speciality of Pulmonary circulation.
6. Distal Tubular events.
7. Cystometrogram.
8. Autoregulation in Myocardial perfusion.
9. Hyperstimulation Nervous Syndrome.
10. Cushing's Reflex.

III. Reasoning Out:

(4 x 5 = 20)

1. Meta arterioles – The seat of peripheral vascular resistance. Reason out.
2. White coat hypertension.
3. Death in AC current shock.
4. Loop diuretics are safe in clinical practice. Reason out.
