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

[DM 0822] AUGUST 2022 Sub. Code :1496

D.M. – PULMONARY MEDICINE

Paper I – BASIC SCIENCES APPLIED TO PULMONARY MEDICINE AND CRITICAL CARE

Q.P. Code: 161496

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Structure, functions and pathology of secondary pulmonary lobule.
2. Control of pulmonary circulation.

II. Write notes on: **(10 x 7 = 70)**

1. Airway resistance.
2. Dead space.
3. Immune responses to aspergillus.
4. Equal pressure point.
5. Structure of SARS-COV2 virus.
6. Oxygen transport in blood.
7. Pathogenesis of tobacco addiction.
8. EBUS elastography.
9. Principles of allergen immunotherapy.
10. Rituximab.

****

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

[DM 0124] **JANUARY 2024** **Sub. Code :1496**

D.M. – PULMONARY MEDICINE

PAPER I – BASIC SCIENCES APPLIED TO PULMONARY MEDICINE AND CRITICAL CARE

Q.P. Code: 161496

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Describe the methods to assess diffusion capacity of the lung (DLCO). What are the factors influencing DLCO? Enumerate the causes of altered DLCO.

2. Write a note on cardiopulmonary exercise testing. What are the indications and contraindications for cardio-pulmonary exercise testing? How will you perform risk stratification based on functional assessment in a patient posted for lobectomy?

II. Short notes on **(10 x 7 = 70)**

1. What is loop gain? Explain its role in the control of ventilation during sleep.
2. What is impulse oscillometry? Discuss the indications, advantages and disadvantages of this modality.
3. Describe the alveolar gas equation and its clinical importance.
4. Define an aerosol and discuss the factors affecting aerosol delivery. List drugs that can be delivered as aerosols.
5. Explain in detail about carbon-dioxide dissociation curve and the factors influencing it.
6. Describe the distribution of perfusion in the lung and its clinical importance
7. Define time constant in lung physiology. What are its determinants and clinical relevance?
8. Discuss the role of point of care ultrasonography in pulmonary and critical care medicine.
9. Enumerate the mediastinal lymph node stations and describe their clinical importance.
10. Describe the control of ventilation and pathophysiology of respiratory failure.

****

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

[DM 0225] FEBRUARY 2025 Sub. Code :1496

D.M. – PULMONARY MEDICINE

PAPER I – BASIC SCIENCES APPLIED TO PULMONARY MEDICINE AND CRITICAL CARE

Q.P. Code: 161496

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. What is alveolar interdependence? Explain how does it help in the stability of the alveoli? What is the other factor that helps prevent collapse of alveoli? Explain its role in detail.

2. Describe the various field walk tests? Comment on the learning effect in each of these tests. Are there any clinically important differences determined for these tests? How do these tests help to prognosticate various respiratory diseases?

II. Short notes on: **(10 X 7 = 70)**

1. Explain the anatomical and physiological shunting in the lung. Elaborate on its role in the pathogenesis of hepatopulmonary syndrome.

2. Draw and describe the azygos and vena caval systems.

3. Describe the anatomy of the intercostal space, the pleurae and the pleural space and its implications for pleural tap, closed pleural biopsies and medical thoracoscopy.

4. Explain the normal physiology of the pleural fluid characteristics, formation and absorption. Explain the pathophysiology in transudate and exudate with examples.

5. List the bronchopulmonary segments of the lung. Elaborate on the various methods in predicting post-operative lung function after lung resection surgeries.

6. What is closing volume and closing capacity? Explain their clinical significance.

7. The biochemistry behind anaerobic threshold and its clinical implications.

8. Angiotensin Converting Enzyme Receptor.

9. Avacopan.

10. Tocilizumab.

****

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

[DM 0825] **AUGUST 2025** **Sub. Code :1496**

D.M. – PULMONARY MEDICINE

PAPER I – BASIC SCIENCES APPLIED TO PULMONARY MEDICINE AND CRITICAL CARE

Q.P. Code: 161496

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Normal Sleep architecture, stages of sleep and disorders of sleep cycle.

2. Control of breathing and pathophysiology of sensation of dyspnea.

II. Short notes on: **(10 X 7 = 70)**

1. Airway resistance.
2. Immune responses to Aspergillus.
3. Biases in clinical research.
4. Structure of gas exchange part of the lungs.
5. Principles of allergen immunotherapy.
6. Oxygen transport in blood.
7. Dynamic airway compression.
8. Describe research methods to study exposure/risk and disease.
9. Rituximab in respiratory diseases.
10. Factors affecting oxygen dissociation curve.

****

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

[DM 0126] **JANUARY 2026** **Sub. Code :1496**

D.M. – PULMONARY MEDICINE

PAPER I – BASIC SCIENCES APPLIED TO PULMONARY MEDICINE AND CRITICAL CARE

Q.P. Code: 161496

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Explain the pathogenesis and physiological basis of hypoxemia in acute respiratory distress syndrome (ARDS).

2. Discuss the role of innate immunity in pulmonary infections.

II. Write notes on: **(10 x 7 = 70)**

1. Nitric oxide in pulmonary physiology.

2. Oxygen dissociation curve.

3. Pulmonary Vascular Remodelling.

4. Molecular mechanisms of asthma.

5. Non-invasive ventilation principles.

6. Lung protective ventilation strategies.

7. Ventilatory adaptations during exercise.

8. Cellular mechanisms of lung fibrosis.

9. Inflammatory mediators in COPD.

10. Biomarkers in sepsis.

****