

B.Sc. RESPIRATORY THERAPY
(New Syllabus 2014-2015)

THIRD YEAR

PAPER IV – CARDIO PULMONARY REHABILITATION

Q.P. Code: 802619

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Explain the field tests performed in pulmonary rehabilitation.
2. Describe the various pathophysiologic abnormalities in chronic respiratory disease and possible mechanisms for improvement after exercise training.
3. Describe postural drainage. Write down the indications and contraindications of postural drainage. Describe the drainage position of right lower lobe.

II. Write notes on:

(8 x 5 = 40)

1. Inspiratory muscle training.
2. Modified MRC scale.
3. 6- minute walk test.
4. Role of diet and nutrition in pulmonary rehabilitation.
5. Write about the team members of cardiac rehabilitation.
6. Endurance training.
7. St. George Respiratory questionnaire.
8. Indications for Cardiopulmonary exercise testing (CPET).

III. Short answers on:

(10 x 3 = 30)

1. Define pulmonary rehabilitation by ERS guidelines.
2. Blood Lactate.
3. Acapella device.
4. Exercise ECG.
5. Cough and huff.
6. BODE index.
7. Neuromuscular electrical stimulation.
8. Aims of pulmonary rehabilitation.
9. List the scales and questionnaires used to assess dyspnoea.
10. Buteyko breathing.

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Time: Three Hours

Maximum: 100 Marks

Answer all questions

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

1. What are the lung function changes postoperatively? What are the techniques to improve secretion clearance post operatively?
2. List the field tests done to measure exercise capacity and explain anyone of them.
3. Define quality of life. Explain the two most widely used respiratory specific questionnaire to assess the health related quality of life in pulmonary rehabilitation.

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

1. Common goals of pulmonary rehabilitation programs.
2. Positive expiratory pressure therapy.
3. Indications of long term oxygen therapy (LTOT).
4. Intermittent positive pressure breathing.
5. Phases of cardiac rehabilitation.
6. Benefits from exercise reconditioning program.
7. BODE index.
8. Resistance training.

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

1. Purse lip breathing.
2. VO₂ max.
3. Types of muscle fibers.
4. Screening questionnaire for anxiety.
5. Incentive spirometry.
6. Mechanism of cough.
7. Exclusion criteria for pulmonary rehabilitation.
8. Various methods to estimate free fat mass (FFM).
9. Borg scale.
10. What are the three different perspectives from which outcome assessment can be evaluated in pulmonary rehabilitation?

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Time: Three Hours

Maximum: 100 Marks

Answer all questions

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

1. Describe in brief on pulmonary rehabilitation assessment and management for a 50 year old male patient.
2. Define ischemic heart disease and its causes. Write in detail on the post operative management for a patient who has undergone coronary artery bypass grafting (CABG).
3. Explain in detail on pre and post operative management of pneumonectomy.

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

1. Pulmonary hypertension.
2. Coughing techniques.
3. Mitral stenosis.
4. Cardio pulmonary stress testing.
5. Six minute walk test.
6. Explain in detail on position for postural drainage of right upper lobe.
7. Oxygen therapy.
8. Home mechanical ventilation.

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

1. Cyanosis.
2. Pursed lip breathing.
3. Clubbing.
4. Gloss pharyngeal breathing exercise.
5. Breathing patterns.
6. Cystic fibrosis.
7. Draw and label coronary circulation.
8. Tread mill test.
9. QRS complex in ECG.
10. Incentive spirometry.

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Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Discuss the principles of cardiac rehabilitation for myocardial infraction.
2. Define postural drainage. Write down the indication and contraindication of postural drainage. Describe the drainage position for right lower lobe of the bronchial tree.
3. Define cystic fibrosis and its diagnostic criteria. Explain briefly on pulmonary rehabilitation for cystic fibrosis

II. Write notes on:

(8 x 5 = 40)

1. Chest physiotherapy.
2. Bronchodilators.
3. Tetralogy of fallot.
4. Ventricular septal defect.
5. Chest mobilization exercises.
6. Explain on the program management in pulmonary rehabilitation.
7. Cough reflex.
8. Atelectasis and its management.

III. Short answers on:

(10 x 3 = 30)

1. Auscultatory areas of respiratory system.
2. Coronary angiogram (CAG).
3. Flail chest.
4. Shuttle walk test.
5. Blue bloaters.
6. Vital signs.
7. Diaphragm.
8. Corpulmonale.
9. Acapella.
10. Complications of pulmonary surgery.

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Q.P. Code: 802619

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. How will you assess a COPD patient referred for pulmonary rehabilitation?
2. Mention the field tests done to measure exercise capacity and explain any one of them.
3. Define quality of life. Explain the two most widely used respiratory specific Questionnaires to assess health related quality of life in pulmonary rehabilitation.

II. Write notes on:

(8 x 5 = 40)

1. Explain Buteyko breathing.
2. Write about the measurement of exercise capacity in pulmonary rehabilitation.
3. List the positive airway pressure adjuncts and explain any one of them.
4. Mention the team members of cardiac rehabilitation and their roles.
5. Explain active cycle of breathing.
6. Mention the exclusion criteria for pulmonary rehabilitation.
7. St. George Respiratory questionnaire.
8. Mention the pathophysiologic abnormalities in chronic respiratory diseases and changes with exercise training.

III. Short answers on:

(10 x 3 = 30)

1. Clinical use of BODE index
2. Borg scale.
3. Mention the goals of cardiac rehabilitation.
4. Define pulmonary rehabilitation by American Thoracic Society guidelines.
5. What are the aims of pulmonary rehabilitation?
6. How would you estimate the loss of fat free mass in patients with chronic respiratory disease?
7. Mention the inclusion criteria for pulmonary rehabilitation.
8. Define health related quality of life.
9. Write about modified medical research council to assess dyspnoea.
10. Mention the team members of pulmonary rehabilitation.

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Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Explain BODE index.
2. Mention the team members of pulmonary rehabilitation and explain their role.
3. Define postural drainage and mention the indications and contraindications for postural drainage.

II. Write notes on:

(8 x 5 = 40)

1. Explain active cycle of breathing.
2. List any five examples of educational topics in pulmonary rehabilitation.
3. Write Borg scale and its clinical uses.
4. Bronchopulmonary segments.
5. Write about incremental shuttle walk test.
6. Write briefly about generic questionnaire used to assess health related quality of life in patients with chronic respiratory disease.
7. Write in detail about the program duration, frequency, and specificity of exercise training.
8. Define pulmonary rehabilitation by ATS and ERS guidelines.

III. Short answers on:

(10 x 3 = 30)

1. Glossopharyngeal breathing exercise.
2. Positive Expiratory Pressure (PEP) device.
3. Mention the field tests done to measure exercise capacity.
4. Physiology of pursed lip breathing technique.
5. Indications for 6 minute walk test.
6. Define quality of life.
7. Mention the team members of cardiac rehabilitation.
8. What are the important patient-centered outcomes in pulmonary rehabilitation?
9. Mention the exclusion criteria for pulmonary rehabilitation.
10. How would you estimate the loss of fat free mass in patients with chronic respiratory disease?

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

[LR 1220]

**DECEMBER 2020
(AUGUST 2020 EXAM SESSION)**

Sub. Code: 2619

**BACHELOR IN RESPIRATORY THERAPY
THIRD YEAR
PAPER IV – CARDIO PULMONARY REHABILITATION
Q.P. Code: 802619**

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Define pulmonary rehabilitation. Write in detail about the patient assessment for pulmonary rehabilitation.
2. Define postural drainage. Mention the indications and contraindications of postural drainage. Describe the drainage position of right lobe of the lung.
3. Describe the pathophysiology and management of cystic fibrosis.

II. Write notes on:

(8 x 5 = 40)

1. Cardiopulmonary stress testing.
2. Shuttle walk test.
3. Incentive spirometer.
4. Goals of cardiac rehabilitation.
5. Bronchopulmonary Segments.
6. Patient education and counselling.
7. Peak Expiratory Flow Rate.
8. Suctioning.

III. Short answers on:

(10 x 3 = 30)

1. Blue blotters.
2. Glossopharyngeal breathing exercise.
3. Percussion.
4. Mucolytics.
5. Apnea.
6. Components of ECG.
7. Difference between huffing and coughing.
8. Unstable angina.
9. Kyphoscoliosis.
10. CPAP masks.

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

[AHS 0122]

JANUARY 2022

Sub. Code: 2619

(FEBRUARY 2021 & AUGUST 2021 EXAM SESSION)

**B.Sc. RESPIRATORY THERAPY
THIRD YEAR (Regulation from 2014-2015)
PAPER IV – CARDIO PULMONARY REHABILITATION
Q.P. Code: 802619**

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Describe in detail about the exercise assessment and training of a pulmonary rehabilitation candidate.
2. Define COPD. Write in detail the pathophysiology, diagnosis and management of COPD.
3. Define suctioning. Write in detail the procedure, indications and contraindications of suctioning.

II. Write notes on:

(8 x 5 = 40)

1. Various components of pulmonary rehabilitation.
2. Six minute walk distance test.
3. Positive expiratory pressure devices.
4. Diaphragmatic breathing exercises.
5. Postural drainage.
6. Treadmill test.
7. Aerosol therapy.
8. Bronchoprovocation test.

III. Short answers on:

(10 x 3 = 30)

1. Paradoxical breathing.
2. Atelectasis.
3. Manual hyperinflation.
4. Pulmonary rehabilitation team members.
5. Difference between scoliosis and kyphosis.
6. Huffing.
7. Interfaces of Non-invasive Ventilation (NIV).
8. Bronchodilators.
9. Asthma zones.
10. Pink puffers.

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

[AHS 0922]

SEPTEMBER 2022
(FEBRUARY 2022 & AUGUST 2022 EXAM SESSIONS)

Sub. Code: 2619

B.Sc. RESPIRATORY THERAPY
THIRD YEAR (Regulation from 2014-2015)
PAPER IV – CARDIO PULMONARY REHABILITATION
Q.P. Code: 802619

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

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

1. Describe the aims and goals of pulmonary rehabilitation. Add a note on the selection and assessment of pulmonary rehabilitation candidate.
2. Write in detail about Bronchial hygiene therapy.
3. Define the various lung volumes and capacities with a diagram. Add a note on Reversibility testing in pulmonary function test.

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

1. Pursed lip breathing.
2. Patient education.
3. Inspiratory muscle training.
4. Positioning.
5. Non-Invasive Ventilation (NIV).
6. Auscultation of the respiratory system.
7. Lateral costal expansion exercises.
8. Relaxation position for dyspnea patients.

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

1. Modified Medical Research Council (MMRC) Scale.
2. Obstructive Sleep Apnea (OSA).
3. Cough reflex.
4. Hemoptysis.
5. Cheyne stokes breathing.
6. Pectus excavatum.
7. Chest vibrators.
8. Indications for six minute walk distance test.
9. Quality of life.
10. Bronchitis.

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

[AHS 0423]

APRIL 2023

Sub. Code: 2619

**B.Sc. RESPIRATORY THERAPY
THIRD YEAR (Regulations 2014-2015 & 2018-2019 onwards)
PAPER IV – CARDIO PULMONARY REHABILITATION
Q.P. Code: 802619**

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Exercise testing for evaluation of Hypoxemia and Desaturation.
2. Structure of a Pulmonary Rehabilitation Program.
3. Surface anatomy of Lung and add a note on Bronchopulmonary Segments.

II. Write notes on:

(8 x 5 = 40)

1. What are the common goals of Pulmonary Rehabilitation programs?
2. Indications and Contraindications for Pulmonary Rehabilitation.
3. Evaluation of Rehabilitation Program outcomes.
4. Mention the potential Hazards of Pulmonary Rehabilitation.
5. Contraindications for the use of Chest PhysioTherapy (CPT).
6. Write a note on Positive airway pressure adjuncts.
7. Forced Expiratory techniques.
8. Percussion of chest.

III. Short answers on:

(10 x 3 = 30)

1. Write the modified Borg Dyspnea scale.
2. Pulmonary Rehabilitation team.
3. Postural drainage.
4. Assessment of Quality of Life.
5. Breathing control methods.
6. Abnormalities of chest wall.
7. Atrial flutter.
8. Physical reconditioning.
9. Common physiologic parameters measured during exercise evaluation.
10. Mention physical and psychological dysfunctions in patient with COPD.

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

[AHS 1123]

NOVEMBER 2023

Sub. Code: 2619

B.Sc. RESPIRATORY THERAPY
THIRD YEAR (Regulations 2014-2015 & 2018-2019 onwards)
PAPER IV – CARDIO PULMONARY REHABILITATION
Q.P. Code: 802619

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

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

1. What are the Lung functions changes postoperatively? What are the techniques to improve secretion clearance post operatively?
2. How will you assess a COPD patient referred for Pulmonary Rehabilitation?
3. List the positive airway pressure adjuncts and explain it.

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

1. Bronchial Hygiene Therapy.
2. Structure of Pulmonary Rehabilitation.
3. Bronchopulmonary segments.
4. Cardiopulmonary Exercise testing.
5. Goals of Cardiac Rehabilitation.
6. Breathing exercises.
7. Program duration, frequency and specificity of exercise training.
8. Assessment of Dyspnoea.

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

1. BODE index.
2. CPAP mask.
3. Chest Percussion.
4. Buteyko Breathing.
5. Auscultatory areas of respiratory system.
6. Management of atelectasis.
7. Quality of life.
8. Cough and huff.
9. Neuromuscular electrical stimulation.
10. VO₂ max.

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

[AHS 0424]

APRIL 2024

Sub. Code: 2619

B.Sc. RESPIRATORY THERAPY
THIRD YEAR (Regulations 2014-2015, 2018-2019 onwards)
PAPER IV – CARDIO PULMONARY REHABILITATION
Q.P. Code: 802619

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

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

1. Define Exertional Breathlessness. Write in detail on the post operative management for a patient who has undergone Coronary Artery Bypass Grafting (CABG).
2. Discuss the principles of cardiac rehabilitation for Myocardial infarction.
3. Mention the field tests done to measure exercise capacity and explain any one of them.

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

1. Chest Percussion.
2. Postural drainage.
3. Assessment of Quality of Life.
4. Modified Medical Research Council Scale (MMRC Scale)
5. Bronchial Hygiene therapy.
6. Rehabilitation of COPD patient.
7. Role of diet and nutrition in pulmonary rehabilitation.
8. Endurance training.

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

1. Abnormal breath sounds.
2. Forced Expiratory Technique.
3. Indications for 6 – minute walk test.
4. Cardiopulmonary exercise testing.
5. Goals of pulmonary rehabilitation.
6. Acapella.
7. Example of infusion calculation.
8. Team members of cardiac rehabilitation.
9. Patients who require Pulmonary Rehabilitation.
10. Hospital Anxiety and Depression Questionnaire.

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

[AHS 0125]

JANUARY 2025

Sub. Code: 2619

**B.Sc. RESPIRATORY THERAPY
THIRD YEAR (Regulations 2014-2015, 2018-2019 onwards)
PAPER IV – CARDIO PULMONARY REHABILITATION
*Q.P. Code: 802619***

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

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

1. Patient evaluation and selection for pulmonary rehabilitation program.
2. Bronchopulmonary segments and its clinical implications?
3. Assessment of patient and common cardiopulmonary symptoms.

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

1. Indications for hyperbaric oxygen therapy.
2. Outcomes after chest physical therapy (CPT).
3. Contraindications for positive airway pressure adjuncts in airway clearance.
4. Bronchopulmonary hygiene.
5. Cardiac rehabilitation.
6. Assessment and monitoring for Pulmonary rehabilitation.
7. Benefits of exercise reconditioning.
8. Key factors in selecting an airway clearance strategy.

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

1. Depression.
2. Modified Borg Scale.
3. Postural drainage.
4. Surface anatomy of lung.
5. Chest percussion.
6. Karvonen's formula for target heart rate.
7. Monitoring during exercise testing.
8. Modified Medical Research Council scale for dyspnoea.
9. Exertional dyspnoea.
10. 6 min walk test.

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

[AHS 0425]

APRIL 2025

Sub. Code: 2619

B.Sc. RESPIRATORY THERAPY
THIRD YEAR (Regulations 2014-2015, 2018-2019 onwards)
PAPER IV – CARDIO PULMONARY REHABILITATION

Q.P. Code: 802619

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

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

1. Pulmonary Rehabilitation. Write in detail about the patient assessment in Pulmonary Rehabilitation.
2. Lung volumes and capacities with diagram. Also write about techniques used to measure residual volume, functional residual capacity, total lung capacity, total gas volume.
3. Define Six-Minute Walk test. Explain in detail about Steps, Indication, Contraindication, Factors affecting of Six-Minute Walk test.

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

1. Steps for Diaphragmatic breathing.
2. Acapella.
3. Postural drainage.
4. Absolute and relative contraindication of Cardiopulmonary Exercise Test.
5. Inspiratory muscle training.
6. Cough reflex and mechanisms impairing cough reflex.
7. Goals of Cardio pulmonary rehabilitation.
8. Broncho pulmonary segments.

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

1. Peak expiratory flow rate.
2. Indication and contraindication of rehabilitation.
3. Active cycle of breathing technique.
4. Flutter.
5. Dyspnea scale.
6. Visual Analog Scale.
7. Indications of Airway clearance therapy.
8. Oxygen concentrator.
9. Quality of life.
10. Body Mass Index.

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

[AHS 1125]

NOVEMBER 2025

Sub. Code: 2619

B.Sc. RESPIRATORY THERAPY
THIRD YEAR (Regulations 2014-2015 & 2018-2019 onwards)
PAPER IV – CARDIO PULMONARY REHABILITATION
Q.P. Code: 802619

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Program implementation in Pulmonary Rehabilitation.
2. Elaborate on Cardio Pulmonary Exercise testing.
3. Assessment of Dyspnea, various scales used in Dyspnea.

II. Write notes on:

(8 x 5 = 40)

1. Bronchopulmonary segments.
2. Psychogenic Dyspnea.
3. Percussion over lung field and its clinical implications.
4. Clinical application of lab data for Respiratory therapist.
5. Causes of malnutrition in COPD patients.
6. Benefits from exercise reconditioning.
7. Incremental Exercise testing.
8. Relative contraindications for exercise testing.

III. Short answers on:

(10 x 3 = 30)

1. Functions of upper airway.
2. Bronchial hygiene therapy.
3. Pulmonary Rehabilitation session.
4. Home oxygen and aerosol therapy.
5. Five components of Pulmonary Rehabilitation program.
6. Six minute walk test.
7. Modified Borg scale and visual analogue scale.
8. Chest physical therapy.
9. Anxiety.
10. Clinical signs of Hypoxia.
