

**BOWEN UNIVERSITY, IWO**  
**B.PHYSIOTHERAPY PROGRAMME**  
**2021/2022 SESSION SECOND SEMESTER EXAMINATION**  
**PST 421: Cardiorespiratory Disorders And Rehabilitation**

Date: 20/09/2022

Time allowed: Two Hours

**PART I**

**Instructions: Answer all questions on the question paper.**

**Answer TRUE or FALSE**

1. Atelectasis is synonymous with pneumothorax \_\_\_\_\_
2. In tension pneumothorax the cavity pressure is less than the atmospheric pressure \_\_\_\_\_
3. Iatrogenic pneumothorax is a closed pneumothorax \_\_\_\_\_
4. In closed pneumothorax, the atmospheric pressure is greater than the cavity pressure \_\_\_\_\_
5. Spontaneous pneumothorax is a closed pneumothorax \_\_\_\_\_
6. Reduction in expectorated sputum quantity is an expected initial outcome of physiotherapy management in pneumothorax \_\_\_\_\_
7. In autogenic drainage, fine crackles towards the end of breath indicates that patient should start with low lung volume breathing \_\_\_\_\_
8. Head down position in postural drainage may cause decreased intracranial pressure \_\_\_\_\_
9. The maximum speed of exhalation is always normal in COPD \_\_\_\_\_
10. ST elevation is seen on the ECG in subendocardial myocardial infarction \_\_\_\_\_
11. Chest pain in myocardial infarction is retrosternal \_\_\_\_\_

**Radiographic observation(s) suggesting tension pneumothorax include:**

12. Cardiomedastinal shift towards the unaffected side \_\_\_\_\_
13. Widening of the intercostal spaces due to increased pressure within the unaffected hemithorax \_\_\_\_\_

**Choose the correct option**

14. A patient reports in your clinic with complaint of tiredness after performing his activities of daily living, the best option of treatment you will adopt for this patient is  
a. breathing exercise b. graded exercise programme c. chest mobilization exercise  
d. thoracic expansion exercise
15. General anaesthesia may lead to ineffective cough because it can lead to  
a. decreased inspiratory capacity b. decreased action of cilia c. increase in the amount or thickness of mucus d. all of the above
16. A 70 year old active patient with bronchial carcinoma was referred to you on account of impaired airway clearance. Which of the options listed is the best treatment technique to use for this patient?  
a. chest shaking and vibration b. chest percussion c. active cycle of breathing technique  
d. incentive spirometry

17. MI secondary to ischaemia due to either increased oxygen demand or decreased supply is classified as: a. Type 1 b. Type 2 c. type 3 d. type 5
18. Phase one of cardiac rehabilitation involves the following except
  - a. Mobilization b. Involvement of the relevant carer c. assessment of cardiac risk d. Assessment of physical, psychological and social needs
19. The cough mechanism is in the following order
  - I. Closure of the glottis and tightening of the vocal cords
  - II. Explosive expiration of air
  - III. Deep inspiration
  - IV. Contraction of the abdominal muscles and elevation of the diaphragm
  - V. Opening of the glottis
  - a. I,II,III,IV,V b. III, I, IV, V, II c. III,IV,I,V,II d. I,III,IV,V,II
20. The following treatment techniques emphasises on expiratory flow except
  - a. active cycle of breathing technique b. Autogenic drainage c. Pursed-lip breathing d. Incentive spirometry.

**Fill in the gap(s) with the appropriate word(s)**

Mention two general precautions to take when teaching a patient breathing exercise

21. \_\_\_\_\_
22. \_\_\_\_\_

Risk-stratification is important before starting cardiac rehabilitation, mention four risk factors that may be present to classify a patient as low risk.

23. \_\_\_\_\_
24. \_\_\_\_\_
25. \_\_\_\_\_
26. \_\_\_\_\_

Mrs W.A, a 60 year old woman presented in your physiotherapy clinic with a diagnosis of Spontaneous pneumothorax. She had pleurodesis done two weeks before she was referred for physiotherapy

Mention any two impairments you are likely to find during examination of this patient

27. \_\_\_\_\_
28. \_\_\_\_\_

Outline two physiotherapy technique you would use in the management of each of the impairments you mentioned above

29. \_\_\_\_\_
30. \_\_\_\_\_

**Given the case scenario below, answer questions 31 – 40**

Mr E. is a 55 year old man who underwent left lower lobe lobectomy 2 days ago on account bronchiectasis. Prior to the surgery, patient has a history of productive cough which has lasted for years. He is a known smoker and social drinker.

Mention four impairments you might find in your examination of this patient.

- 31. \_\_\_\_\_
- 32. \_\_\_\_\_
- 33. \_\_\_\_\_
- 34. \_\_\_\_\_

Enumerate four variables you would objectively assess in this patient

- 35. \_\_\_\_\_
- 36. \_\_\_\_\_
- 37. \_\_\_\_\_
- 38. \_\_\_\_\_

Mention two respiratory complication that can occur as a result of this surgery

- 39. \_\_\_\_\_
- 40. \_\_\_\_\_

41. Myocardial infarction associated with atherosclerosis involving a major coronary artery is classified as:  
\_\_\_\_\_

42. Myocardial infarction associated with percutaneous coronary intervention is classified as \_\_\_\_\_

Loss of consciousness in myocardial infarction is due to

- 43. \_\_\_\_\_ and
- 44. \_\_\_\_\_

Phase 3 of cardiac rehabilitation involves

- 45. \_\_\_\_\_
- 46. \_\_\_\_\_
- 47. \_\_\_\_\_
- 48. \_\_\_\_\_

Mention three goals of breathing exercise

- 49. \_\_\_\_\_
- 50. \_\_\_\_\_
- 51. \_\_\_\_\_
- 52. \_\_\_\_\_

53. As part of a cardiac rehabilitation team, you are to prescribe exercise for a 60 year old man on low intensity (40 -50%). Using the age-adjusted predicted maximum heart rate formula, calculate the training heart rate for this patient. \_\_\_\_\_

A 70 year old patient with myocardial infarction was referred to you for exercise prescription. He has a resting heart rate of 80 beats per minute and a maximum heart rate of 160 beats per minute during an ECG exercise test. You have decided to use a moderate intensity for the exercise set at 60% -75% of heart rate reserve. Using the Karnoven formula

54. Calculate the heart rate reserve for this patient \_\_\_\_\_

55. Calculate the training heart rate for this patient \_\_\_\_\_

56. What is the pathological basis of dyspnoea as a clinical feature of myocardial infarction? (2 marks)

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57. You have been managing a 60 year old patient in a cardiac rehabilitation programme for the past four weeks. You have placed this patient on brisk walking for 20 minutes on a 40-50% training intensity twice in a week. How will you progress this patient's exercise prescription. (5 marks)

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58. A 65 year old man has been referred to you for exercise prescription as part of a cardiac rehabilitation programme. After assessment, the patient was risk stratified as having a moderate risk of further cardiac event associated with exercise. Briefly describe your exercise programme for this patient with emphasis on warm-up, aerobic conditioning and cool-down exercise. (8 marks)

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**SECTION A**

**ANSWER ALL QUESTIONS**

**Answer SECTION A on the QUESTION PAPER**

**Pick the best option for the following questions**

1. Circle all that is true about transudative pleural effusion
  - A. In transudative pleural effusion, there is decreased oncotic and increased hydrostatic pressures
  - B. There is an accumulation of high-protein, high cell count fluid in the pleural space
  - C. In transudative pleural effusion, there is increased oncotic and decreased hydrostatic
  - D. This is an accumulation of low-protein, low cell count fluid in the pleural space
  - E. Stony dull note on percussion examination
2. Transudative pleural effusion is common in which of the following conditions
  - A) Pneumonia B. Cystic fibrosis C. Congestive heart failure D. Lung cancer E. None of the above
3. Pneumonia resolution stage is characterized by
  - A. Leukocytes migration into the congested alveoli B) A large number of macrophages enter the alveolar spaces C) The lungs become hyperemic D) Occurrence of Pleurisy
4. Which of the following deficiencies can result into lung disease
  - A. Gamma globulin deficiency B. Alpha-1 antitrypsin deficiency C. Albumin deficiency D. Superoxide Dismutase deficiency
5. Circle all that is true about exudative pleural effusion
  - A. Usually occur when the pleura is damaged by trauma, infection, and malignancy
  - B. It could result from increased capillary permeability, leading to leakage of protein, cells, and other serum constituents
  - C. During auscultation, patient could present with increased breath sounds and high vocal resonance
  - D. Common in pneumonia and pulmonary embolization
6. In pleural effusion, which of the following can be found in the pleural space
  - A. Blood B. Chyle C. Cholesterol D. Urine E. All of the above

**Fill in the gap with the APPROPRIATE ANSWER in the following questions**

7. ....stage of pneumonia is characterized by coughing and abnormal breathing

8. In respiration mechanics, an area of the lungs with ventilation but no perfusion is known as .....
9. In respiration mechanics, an area of the lungs with perfusion but no ventilation is known as.....
10. Pneumonia stage characterized by the presence of desquamated epithelial cells and fibrin within the alveoli is known as .....

**Answer TRUE or FALSE in the following questions**

11. In spirometry testing, a ratio of the forced expiratory volume in one second to forced vital capacity greater than 0.7 confirms the diagnosis of COPD.....
12. A high Ventilation-Perfusion ratio means ventilation exceeds perfusion.....
13. A low Ventilation-Perfusion ratio means perfusion exceeds ventilation.....

**SECTION B**

**ANSWER ALL QUESTIONS**

**Answer SECTION B in the ANSWER BOOKLET**

1. Discuss briefly two (2) physiological principles of respiration and two (2) physiological principles of circulation (8 marks)
2. A 61 year old man managed for COPD referred for pulmonary Rehabilitation. Patient vitals are stable. Patient major problem list is easy fatigability.
  - a. What do you understand by pulmonary rehabilitation (2 marks)
  - b. What are your goals of management for this patient (4 marks)
  - c. What is your exercise prescription plan for this patient easy fatigability presentation over a period of 4 weeks, considering the type, frequency, intensity, and duration of the exercise? (6 marks)
  - d. Highlights 4 contraindications to pulmonary rehabilitation (4 marks)
3. You received a referral concerning a 55 year old woman who recently had coronary artery bypass grafting now signposted for cardiac rehabilitation.
  - a. What do you understand by cardiac rehabilitation? (2 marks)
  - b. What are your goals of management for this patient at the phase 1 of cardiac rehabilitation (5 marks)
  - c. Highlights 5 steps of progressive physical activities and exercises you will consider in the cardiac rehabilitation (5 marks)
  - d. List 4 contraindications to cardiac rehabilitation (4 marks)