

**Date** : October 5, 2024  
**Total Marks** : 100  
**Writing Time** : 150 minutes (2.5 hours)  
**Reading Time** : 15 minutes (prior to writing time)

1. Write your Registration Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is to check the number of pages of Question Paper, printing errors, clarify doubts and to read the instructions. You are NOT permitted to write during this time.
3. This paper consists of **TWO SECTIONS**, namely SECTION A & SECTION B:
  - **SECTION A** has two parts:      Part I - 30 Multiple Choice Questions  
  Part II - 4 Short Answer Questions

- **SECTION B** consists of two Case Studies. Choose only **ONE** case study and answer the questions of your choice.
4. All answers should be written on the Answer Booklet provided to you. Candidates are not allowed to write anything on the question paper. If required, ask for additional Answer Booklet.
  5. All answers should be written with correct numbering of Section, Part and Question Number in the Answer Booklet provided to you. Note that any answer written without indicating the Section, Part and Question Number will NOT be evaluated and no marks will be awarded.
  6. Begin each Section and Part on a fresh page of the Answer Booklet.
  7. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
  8. Use of any other paper including paper for rough work is not permitted.
  9. **You must hand over the Answer Booklet to the Invigilator before leaving the examination hall.**
  10. This paper has **9 printed pages**, including this instruction page.

**SECTION A**

**PART I: Multiple Choice Questions [30 marks]**

**Choose the correct answer and write down the letter of your chosen answer in the Answer Booklet against the question number e.g. 31 (d). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.**

1. \_\_\_\_\_ is where the sternum projects forward and is held in a prominent position by the ribs and costal cartilages.
  - a) Barrel chest
  - b) Pectus arcuatum
  - c) Pectus carinatum
  - d) Pectus excavatum
2. Which one of the following is the holistic model of patient care and treatment which takes into consideration a person's physical abilities, emotional and psychological state and greater environmental factors?
  - a) Social model
  - b) Medical Model
  - c) Disability Model
  - d) Biopsychosocial Model
3. Rapid shallow breathing is also known as\_\_\_\_\_
  - a) Hyperpnea
  - b) Tachypnea
  - c) Biot's breathing
  - d) Hyperventilation
4. \_\_\_\_\_ is a continuous whistling sound produced by air passing through a narrowed airway.
  - a) Stertor
  - b) Stridor
  - c) Wheeze
  - d) Crackles
5. While the extremity or joint(s) is held in a static position by the therapist, the patient is asked to describe the position verbally or to duplicate the position of the extremity or joint(s) with the contralateral extremity. What is being tested in the patient?
  - a) Barognosis
  - b) Kinesthesia
  - c) Stereognosis perception
  - d) Proprioceptive awareness

6. \_\_\_\_\_ cranial nerve supply's the taste from anterior tongue
- a) Facial
  - b) Trigeminal
  - c) Occulomotor
  - d) Glossopharyngeal
7. A patient presents with very painful, red and dry skin on their upper shoulders after spending the day outside gardening with no sun protection. What is this patient's MOST likely diagnosis?
- a) Superficial burn
  - b) Full thickness burn
  - c) Deep partial thickness burn
  - d) Superficial partial thickness burn
8. When classifying a burn injury by depth, which ONE of the following extends through the entire dermis and into the hypodermis?
- a) Superficial partial thickness
  - b) Deep partial thickness
  - c) Full thickness
  - d) Subcutaneous
9. Which ONE of the following is the MOST LIKELY complication of subcutaneous burn?
- a) Contracture
  - b) Amputation
  - c) Compartment syndrome
  - d) Increased tissue sensitivity
10. Why is estimating the initial total body surface are affected after a burn injury important as a life saving measure. Select the most appropriate answer.
- a) To estimate amount of blanching on the skin
  - b) To work out the body surface area damaged
  - c) To improve the wound care and management
  - d) To calculate an accurate measurement for fluid resuscitation
11. Which one of the following movements is used to assess the strength of the L3 myotome?
- a) Ankle Dorsiflexion
  - b) Big toe Extension
  - c) Knee Extension
  - d) Hip Flexion

12. Which ONE of the following repeated movement tests should you add to your assessment if a patient has a lateral shift?
- a) Flexion
  - b) Extension
  - c) Rotation
  - d) Slide glides
13. You are assessing a patient with low back pain. During the straight leg raise test, the patient starts to get symptoms at around 75-80 degrees of flexion. You think that this might be due to stretching of their hamstrings. Which ONE of the following tests could you perform to distinguish between hamstrings stretch and sciatic nerve tension?
- a) Obers test
  - b) Slump test
  - c) Thomas test
  - d) Femoral nerve tension test
14. A 69-year-old patient presents with persistent low back pain, which often radiates down his right leg into his hip. He has pain with prolonged sitting, and while he can walk short distances without pain, his pain worsens with longer distances. His pain is not worse at night, and his sleep is not affected. He also has no neurological symptoms. Based on this subjective history and the patient's age, which ONE of the following conditions do you think is more likely?
- a) Strain
  - b) Arthritis
  - c) Disc pathology
  - d) Spondylolisthesis
15. A patient presents with low back pain. They appear to be in a lot of pain and have high fear avoidance. How would you approach the functional screen? Select the best answer.
- a) Ask them to do a full squat to get an understanding of their general range of motion without them having to do too many movements
  - b) Ask them to complete a full functional screen, so you can objectively determine irritability.
  - c) Get a sense of what they are willing to do; for example, see if they can bend forward
  - d) Get them to visualize the movement and then perform it.
16. Complete the sentence with the correct answer. If just one nerve root is involved in a patient's presentation, we will not see a huge sensory or strength loss. Comparing \_\_\_\_\_ can help us to pick up on subtle differences.
- a) One repetitions maximum and ten repetition maximum
  - b) ROM and muscle strength
  - c) Proximal and distal
  - d) Left and right

17. A 17-year-old cricket player presents with low back pain. Her pain has come on gradually, and it is worse when she is bowling. On examination, you observe that she has pain with extension. While palpating her lumbar spine, you notice a step-off. Based on this history, which ONE of the following conditions do you think is more likely?
- a) Spondylolisthesis
  - b) Disc pathology
  - c) Back Strain
  - d) Instability
18. What is the preferred term for spasticity approved by the European consensus on the concepts and measurement of the pathophysiological neuromuscular responses to passive muscle stretch? Select ONE answer.
- a) Hypertonia
  - b) Rigidity
  - c) Hyperactivity
  - d) Hyper-resistance
19. The neurological component of spasticity is characterized by disinhibition occurring at the \_\_\_\_\_ as a direct result of the neurological insult.
- a) Medulla
  - b) Cervical plexus
  - c) Hypothalamus
  - d) Spinal reflex loop
20. You are assessing a patient with a C6 spinal cord injury. He has developed hyper-resistance to passive muscle stretch. While you can easily move his lower extremities, you have noticed a marked increase in muscle tone according to the Modified Ashworth Scale? Select ONE answer.
- a) Grade 1+
  - b) Grade 1
  - c) Grade 2
  - d) Grade 3
21. Complete the sentence with the correct answer. You are working with a 5- year- old-girl with cerebral palsy and her family. The girl's parents mention that their daughter has difficulty communicating with her family and is unable to express her needs. This is an example of \_\_\_\_\_.
- a) A body function
  - b) A body structure
  - c) An activity/participation
  - d) An environmental factor

22. You are working with a 10-year-old boy who has cerebral palsy. He lives with his family in a rural area and does not have access to electricity for much of the day. Limited access to electricity is an example of which ONE of the following?
- a) Body function
  - b) Body structure
  - c) Activity/participation
  - d) Environmental factor
23. You are checking to see if 4-year-old Dema has a subluxed or dislocated hip. She is supine in a hook-lying position with her feet flat. You do not see any difference in height between her knees. How would you document the results of this special test? Select ONE answer.
- a) Positive Galeazzi sign
  - b) Negative Galeazzi sign
  - c) Positive Ortolani sign
  - d) Negative Ortolani sign
24. You are assessing the gait of a 10-year-old boy named Dorji. When he walks, you notice he has a left foot drop. Which muscle would you suspect is weak? Select ONE answer.
- a) Soleus
  - b) Gastrocnemius
  - c) Tibialis anterior
  - d) Tibialis posterior
25. What is ankle equinus?
- a) Foot plantarflexed and hindfoot valgus
  - b) Foot plantarflexed and hindfoot varus
  - c) Foot dorsiflexed and hindfoot valgus
  - d) Foot dorsiflexed and hindfoot varus
26. Which one of the following muscles would be impaired if you observed a Trendelenburg gait?
- a) Gluteus maximus
  - b) Gluteus minimus
  - c) Gluteus medius
  - d) Multifidus
27. Twisting and repetitive movement is also known as
- a) Chorea
  - b) Athetosis
  - c) Dystonia
  - d) Dyskinesia

28. \_\_\_\_\_ is a physical disability caused by brain injury during pregnancy, birth, or shortly after birth. It affects movement, coordination, muscle tone, reflexes, posture and balance.
- a) Spina Bifida
  - b) Cerebral palsy
  - c) Downs syndrome
  - d) Muscular dystrophy
29. Osteoarthritis or degenerative joint disease, is a slowly evolving joint disease that appears to originate in the \_\_\_\_\_.
- a) Cartilage
  - b) Soft tissue
  - c) Ligaments
  - d) Synovial fluid
30. A cystic swelling of the dura and arachnoid, that protrudes through the neural tube defect is \_\_\_\_\_.
- a) Spina bifida occulta
  - b) Meningomyelocele
  - c) Meningocele
  - d) Myelomeningocele

**PART II – Short Answer Questions [20 marks]**

**This part has 4 Short Answer Questions. Answer ALL the questions. Each question carries 5 marks. Mark for each sub-question is indicated in the brackets.**

1. List the various cortical sensation and its assessment. **(5 marks)**
2. Dorji is a 7-year-old boy that has been referred to you by the pediatrician with difficulty in walking. You observe that when the boy walks in the clinic with his mother, he has a waddling gait and mother reports that Dorji experienced difficulty in walking since last few months prior to which he was a typical kid with no history of devt delay and no history of fall. It was an insidious onset and he complains of no pain. The mother also reports that there have been frequent incidences of fall.
  - i. What is your impression on the boy? **(1 mark)**
  - ii. What sign would you expect to be positive in this boy? **(1 mark)**
  - iii. What further assessment would you perform on him? **(3 marks)**
3. Assume you are about to initiate a coordination examination. What screening would be appropriate and why; and in what order would you perform the screening? **(5 marks)**
4. Differentiate between the terms motor control and motor learning. How can impairments in motor control be distinguished from those of motor learning? **(5 marks)**

**SECTION B: Case Study [50 marks]**

**Choose either CASE I OR CASE II from this section. Each case study carries 50 marks. Mark for each sub-question is indicated in the brackets.**

**CASE I**

The patient is a 36-year-old man who sustained a traumatic brain injury (TBI) following a motorcycle accident. On admission to the hospital, the patient was found to have a left frontal laceration with underlying linear skull fracture. CT revealed edema, right basal ganglia contusion and a left frontal contusion. The patient was comatose on admission. His acute hospital course was complicated by increased intracranial pressure and severe spasticity which required casts and splints. A gastric tube was inserted.

Answer all questions. Illustrate with diagrams wherever necessary.

- i. One of the pathophysiology of TBI is diffuse axonal injury. Briefly describe the diffuse axonal injury and its classification. **(5 marks)**
- ii. What is coup-contracoup injury? **(3 marks)**
- iii. What measurement tool is used to measure the level of alertness/consciousness to help define the severity of injury in patients with TBI? Explain the tool briefly. **(5 marks)**
- iv. Describe the CNS and its function with appropriate diagrams. **(5 marks)**
- v. During the acute stage of TBI what are the common complications that might arise and what are the physiotherapy management to prevent those complications? **(5 marks)**
- vi. Which scale is used to examine the cognitive and behavioral recovery in individual with TBI? **(1 mark)**
- vii. What is shaken baby syndrome? **(1 mark)**
- viii. Define Neuroplasticity. What are the principles of neuroplasticity? **(5 marks)**
- ix. Since this patient has severe spasticity, what scale will be used to grade the spasticity and explain the scale? **(5 marks)**
- x. What are the primitive postures that maybe associated with TBI? **(4 marks)**
- xi. During the rehabilitation process list down and explain the roles of the professionals involved as a multidisciplinary team. **(6 marks)**
- xii. What are some of the physiotherapy strategies to manage spasticity besides the ones mentioned in the case? **(5 marks)**

**CASE II**

A 67-year-old female was admitted to the hospital with a diagnosis of acute bacterial pneumonia. She was treated with mechanical ventilation for 5 days, steroids, antibiotics, and bronchodilators. She has a history of COPD and is taken care by her daughter. She was discharged on 7<sup>th</sup> day and referred to physiotherapy.

1. How is the clinical presentation of obstructive disease different from restrictive disease? **(5 marks)**
2. What is breath sounds and what kind of abnormal breath sounds can be heard in patient with COPD? **(5 marks)**



3. What would be the physiotherapy goal for this patient during the acute stage and post discharge from the hospital? **(5 marks)**
4. Name at least 2 exercise testing protocols used for the patients with pulmonary disease. **(2 marks)**
5. What is dyspnea and how do you assess dyspnea? **(3 marks)**
6. Since this patient was ventilated what would be your physiotherapy management while she was on ventilator and off ventilator? **(5 marks)**
7. What scale would you use to measure the functional limitation of this patient? **(2 marks)**
8. How do you determine the exercising heart rate to prescribe the exercise intensity? **(3 marks)**
9. What is Aerobic training? Design an aerobic training protocol for this patient. **(5 marks)**
10. Explain Active Cycle of Breathing Techniques. **(5 marks)**
11. What is long COVID and list down some of the symptoms of long COVID? **(5 marks)**
12. Since this is a 67-year-old female with COPD what is she at risk, once she goes home? What would you assess and how would you manage it? **(5 marks)**

**TASHI DELEK**