1 Multiple-Choice Questions (MCQs)

1. **Which of the following is a characteristic clinical feature of cerebral palsy?**
   a) Sudden onset of symptoms
   b) Progressive muscle weakness
   c) Non-progressive motor impairment
   d) Reversible neurological deficits

2. **What is the primary etiology of a hemorrhagic cerebrovascular accident (CVA)?**
   a) Blockage of a cerebral artery
   b) Rupture of a blood vessel in the brain
   c) Infection of the central nervous system
   d) Autoimmune destruction of neural tissue

3. **Which condition is characterized by spasticity, rigidity, and hypotonia as part of its clinical assessment?**
   a) Hydrocephalus
   b) Spinal cord injury
   c) Guillain-Barré syndrome
   d) Multiple sclerosis

4. **What is a key management strategy for congenital childhood disorders like spina bifida?**
   a) Pharmacological treatment to reverse neural defects
   b) Surgical correction followed by physiotherapy
   c) Exclusive use of electrotherapy modalities
   d) Observation without intervention

5. **In the management of head injury, which physiotherapy approach is commonly emphasized?**
   a) High-frequency TENS for pain relief
   b) Functional re-education and balance training
   c) Ultrasound therapy for tissue healing
   d) Passive stretching to reduce spasticity

2 Short-Answer Questions

6. Describe the clinical features of a thrombotic cerebrovascular accident (CVA) and outline one physiotherapy intervention to address motor deficits.
7. Explain the role of physiotherapy in managing spasticity in patients with cerebral palsy.
8. What are the key considerations for physiotherapy management in a patient with spinal cord injury leading to paraplegia?
9. Discuss the clinical features of Guillain-Barré syndrome and how physiotherapy can aid in recovery during the rehabilitation phase.
10. **Design Thinking (DT)-Based Question:** Design a patient-centered physiotherapy intervention plan for a 10-year-old child with cerebral palsy who struggles with mobility and social participation at school. Outline the steps you would take to empathize with the patient, define the problem, ideate solutions, prototype an intervention, and test its effectiveness.

3 Answer Key with Explanations and References

3.1 MCQ Answers

1. **Answer: c) Non-progressive motor impairment**
   Explanation: Cerebral palsy is characterized by non-progressive motor impairments resulting from brain injury or abnormal development before, during, or shortly after birth. Unlike progressive conditions like muscular dystrophy, cerebral palsy does not worsen over time.
   Reference: Page 65, Unit D, "Congenital childhood disorders - Cerebral palsy."

2. **Answer: b) Rupture of a blood vessel in the brain**
   Explanation: A hemorrhagic CVA occurs due to the rupture of a blood vessel, leading to bleeding in or around the brain, distinguishing it from thrombotic or embolic CVAs caused by blockages.
   Reference: Page 65, Unit D, "Cerebrovascular accidents - Definition, etiology, classification."

3. **Answer: b) Spinal cord injury**
   Explanation: Spinal cord injury assessment includes evaluating tone, which may present as spasticity, rigidity, or hypotonia, depending on the injury's nature and stage. Other conditions listed may not consistently show all three tone abnormalities.
   Reference: Page 65, Unit D, "Assessment of tone - spasticity, rigidity, and hypotonia."

4. **Answer: b) Surgical correction followed by physiotherapy**
   Explanation: Spina bifida often requires surgical intervention to close neural tube defects, followed by physiotherapy to address motor impairments and promote functional independence.
   Reference: Page 65, Unit D, "Congenital childhood disorders - Spina bifida."

5. **Answer: b) Functional re-education and balance training**
   Explanation: Head injury rehabilitation focuses on functional re-education and balance training to restore motor control and coordination, as these are commonly impaired. Other modalities like TENS or ultrasound are less specific to head injury management.
   Reference: Page 65, Unit D, "Trauma - Head injury."

3.2 Short-Answer Responses

6. **Thrombotic CVA Clinical Features and Physiotherapy Intervention**
   Answer: Clinical features of a thrombotic CVA include gradual onset of symptoms such as hemiparesis, speech difficulties, sensory loss, and potential cognitive deficits, caused by a clot obstructing a cerebral artery. One physiotherapy intervention is **Proprioceptive Neuromuscular Facilitation (PNF)**, which uses diagonal movement patterns to enhance motor control and strength in the affected limbs, promoting functional recovery.
   Reference: Page 65, Unit D, "Cerebrovascular accidents - Clinical findings, management."

7. **Role of Physiotherapy in Managing Spasticity in Cerebral Palsy**
   Answer: Physiotherapy manages spasticity in cerebral palsy through techniques like stretching to reduce muscle tightness, strengthening exercises for antagonist muscles, and positioning to prevent contractures. Additional interventions include neurodevelopmental therapy (NDT) to promote normal movement patterns and reduce abnormal tone, improving mobility and function.
   Reference: Page 65, Unit D, "Congenital childhood disorders - Cerebral palsy."

8. **Physiotherapy Considerations for Spinal Cord Injury (Paraplegia)**
   Answer: Key considerations include preventing secondary complications (e.g., pressure sores, contractures), promoting functional independence, and addressing respiratory and bladder dysfunction. Physiotherapy involves passive range-of-motion exercises, strengthening of unaffected muscles, transfer training, and wheelchair mobility skills. Functional electrical stimulation may be used to enhance muscle activation.
   Reference: Page 66, Unit D, "Spinal cord lesions - Paraplegia."

9. **Guillain-Barré Syndrome Clinical Features and Physiotherapy Role**
   Answer: Guillain-Barré syndrome presents with ascending muscle weakness, sensory disturbances, and potential respiratory involvement due to peripheral nerve demyelination. Physiotherapy during rehabilitation includes gentle strengthening exercises, balance training, and gait re-education to restore function as nerve recovery progresses. Techniques like PNF or task-oriented training support motor recovery.
   Reference: Page 66, Unit D, "Peripheral nerve disorders - Guillain-Barré syndrome."

10. **DT-Based Intervention Plan for Cerebral Palsy**
Answer:

- **Empathize**: Conduct interviews with the child, parents, and teachers to understand the child's mobility challenges (e.g., difficulty walking to class) and social barriers (e.g., isolation during play). Observe the child in school to assess physical and emotional needs.
- **Define**: The problem is the child's limited mobility due to spasticity and poor balance, leading to reduced participation in school activities and so- cial isolation.
- **Ideate**: Solutions include a customized mobility aid (e.g., walker), a peer-assisted play program, balance exercises, and school accessibility modifications.
- **Prototype**: Develop a physiotherapy plan with twice-weekly sessions focusing on gait training, balance exercises (e.g., using a vestibular ball), and hydrotherapy to reduce spasticity. Collaborate with the school to trial a lightweight walker and a peer buddy system.
- **Test**: Implement the plan for 8 weeks, assess improvements in gait (e.g., step length, cadence), and gather feedback from the child and teachers on social participation. Adjust the walker or exercise intensity based on outcomes.

Reference: Page 65, Unit D, "Congenital childhood disorders - Cerebral palsy"; Page 74, Unit B, "Principles of co-ordination and balance exercises.