

ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2023
EXAMINATION CATEGORY: TECHNICAL

PAPER III: SUBJECT SPECIALISATION PAPER FOR PHYSIOTHERAPY

Date	: October 7, 2023
Total Marks	: 100
Writing Time	: 150 minutes (2.5 hours)
Reading Time	: 15 minutes (prior to writing time)

GENERAL INSTRUCTIONS:

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 QuestionsAll questions under SECTION A are COMPULSORY.
 - **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.

GOOD LUCK

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. A 46 years old patient was diagnosed with ARDS. The patient is on lung protective ventilation. ABG shows pH-7.1, paO₂ – 47mmHg, paCO₂ – 60mmHg, HCO₃ – 18 mEq/L. What type of respiratory failure does the patient show?
 - a) COPD
 - b) Hypoxic respiratory failure
 - c) Hypercapnic respiratory failure
 - d) Mixed respiratory failure

2. At what age does the child starts ‘Pretend Play’ eg: making a cup of tea and feeding the doll;
 - a) 12 months to < 18 months
 - b) 24 months
 - c) 25 months to < 30 months
 - d) 30 months to < 36 months

3. Sangay has suffered from stroke a month ago and she can now hold water bottle and yarn balls as well as fully release objects from her hand. What stage of Brunnstorm recovery stage is she in?
 - a) Stage III
 - b) Stage IV
 - c) Stage V
 - d) Stage VI

4. This type of spinal cord injury is most associated with increased upper limb functional impairments compared to lower limbs.
 - a) Brown-Sequard syndrome
 - b) Posterior cord syndrome
 - c) Anterior cord syndrome
 - d) Central cord syndrome

5. A physiotherapist chooses to use therapeutic ultrasound for deep heating of the quadriceps muscle. Which set of ultrasound parameters will be MOST effective at increasing the temperature of tissue 3.0 centimeters deep?
 - a) 1.0 MHz, 1.5 W/cm², 50% duty cycle
 - b) 3.0 MHz, 1.5 W/cm², 100% duty cycle
 - c) 1.0 MHz, 1.5 W/cm², 100% duty cycle
 - d) 3.0 MHz, 1.5 W/cm², 50% duty cycle

6. Which of the following tendons are inflamed or involved in the De Quervains tenosynovitis?
 - a) APL and EPB
 - b) ECRL and APB
 - c) FPL and EPB
 - d) FPL and APL

7. You are assessing a traumatic brain injury patient and notes that the patient is very agitated, moving around his bed almost non-stop, requiring restraints at times. The patient is also very confused and follows very few one-step commands. According to the Rancho Los Amigos Levels of Cognitive Function Scale, your patient is at:
- Level II
 - Level III
 - Level IV
 - Level V
8. What is the most important vital sign that indicates a patient is critically ill?
- Tachycardia
 - Tachypnea
 - Hypotension
 - Altered mental state
9. A 17-year-old male athlete is being evaluated by a physiotherapist. The patient reports pain with running and has a sharp pain over the patellar tendon, particularly on the tibial tubercle. Which of the following disorders is MOST likely present?
- Legg-Calvé-Perthes' disease
 - Chondromalacia patellae
 - Osgood-Schlatter disease
 - Pes anserine bursitis
10. A patient who complains of fatigue, difficulty swallowing, and weakness is diagnosed with myasthenia gravis. The physiotherapist, who is teaching the patient with various conservation methods, understands that this condition is most likely caused by which of the following?
- Insufficient secretion of acetylcholine
 - Insufficient dopamine level
 - Demyelination of the neurons
 - Inflammation of the arachnoid and pia matter of the central nervous system
11. A physiotherapist asks a female patient suspected of S1 nerve root compression to try waling on her toes. This test aims to check for muscle weakness. Walking on toes aims to tests which of the following muscles of the lower extremity?
- Flexor digitorum longus
 - Flexor digitorum brevis
 - Sartorius
 - Extensor hallucis longus
12. A physiotherapist is planning a treatment program for a patient who is recently diagnosed with lumbar spinal stenosis. The program would consist of conservative treatment modalities, including exercise and activity. Which of the following is LEAST likely included in the exercise program?
- Spinal flexion exercise
 - Abdominal muscle strengthening
 - Lumbar extension exercise
 - Inclined treadmill testing

13. You are assessing a comatosed patient who is breathing independently in the intensive care unit. During the assessment of the range of motion of the right upper extremity, you notice that the patient is breathing unusually. The pattern is an increase in breathing rate and depth followed by brief pauses in breathing. You should notify the appropriate personnel that the patient is exhibiting which of the following patterns?
- Biot's respiration
 - Cheyne-Stokes respiration
 - Kussmaul respiration
 - Paroxysmal nocturnal dyspnea
14. A 35 years old patient was found unconscious on the medical floor. The nurse on the floor called for your help. You have checked for pulse and it was present. Patient has no chest movement and no lung sounds on auscultation, what intervention do you do next instantly?
- CPR
 - Defibrillate
 - Bag mask ventilation
 - Wait for physician to arrive
15. Healing of injuries occurs in three phases: inflammation phase, proliferation phase, and remodelling phase. Which of the following occurs during the inflammation phase?
- Wound contraction
 - Increased proteoglycans
 - Increased extracellular collagen synthesis
 - Neutrophil migration
16. A female patient reveals that there are times when her hands usually fall asleep. On history taking, the patient says that things usually slip from her fingers, without her noticing. The numbness is usually severe at night. Which of the following statements relate to these symptoms?
- Cubital tunnel syndrome
 - Carpal tunnel syndrome
 - Guyon's tunnel syndrome
 - Radial groove syndrome
17. Which type of joint mobilization technique involves rhythmic oscillations within the available range of motion?
- Grade IV
 - Grade III
 - Grade II
 - Grade I
18. A 40-year-old female patient receiving treatment in the therapy gym begins to have a great increase in pain in her left arm which she describes as an "intense burning." The arm also swells, turns slightly blue, and is extremely sensitive. The pain does not subside, despite several days' rest. Which of the following is the MOST likely source of the pain?
- Myocardial infarction
 - Systemic Lupus Erythematosus
 - Rheumatoid arthritis
 - Reflex sympathetic dystrophy

19. What is the first step in Basic Life Support?
- Chest compression
 - Check for pulse
 - Rescue breaths
 - Activate emergency services
20. What is the appropriate depth of chest compression for an adult in BLS?
- 1 inch
 - 2 inches
 - 3 inches
 - 4 inches
21. A physiotherapist is treating an elderly patient after a prolonged admission in an acute care facility. The patient is maintained on pain medications and diuretics. Before starting an exercise session, the patient complains of fatigue, leg cramps and palpitations. The therapist suspects that these signs and symptoms are indicative of:
- Arterial claudication
 - Hyperglycemia
 - Hypokalemia
 - Deep vein thrombosis
22. Which muscle of the rotator cuff is the primary muscle force for external rotation of the shoulder?
- Teres minor
 - Infraspinatus
 - Subscapularis
 - Supraspinatus
23. The presence of increased amount of reduced Hb in blood causes:
- Anoxia
 - Asphyxia
 - Anorexia
 - Cyanosis
24. Usually dry, leathery and painless are the characteristic features of ____ burns
- First degree burn
 - Partial thickness burn
 - Full thickness burn
 - Fourth degree burn
25. Dorsal subluxation of the lower end of the ulna due to the retarded growth of the lower end of radius is called:
- Madelung's deformity
 - Haglund's deformity
 - Gun stock deformity
 - Dinner fork deformity

26. Which statement is NOT TRUE about the International Classification of Functioning and Disability (ICF) model?
- a) The ICF model does not include environmental factors because the environment is not important in people's functioning.
 - b) Body function and structure impairments can limit a person's ability to complete activities, such as sitting, walking, transferring in and out of bed.
 - c) Activity limitations can affect a person's ability to participate in life such as working, going to school or playing.
 - d) The ICF model can describe a person's level of functioning no matter what type of health condition or disease they have.
27. When the capsuloligamentous tension is sufficient and articular surfaces are drawn into full contact, it is called
- a) Closed kinematic chain
 - b) Closed packing of joint
 - c) Strain
 - d) Sprain
28. TFCC is found in
- a) shoulder
 - b) wrist
 - c) Hip
 - d) ankle
29. Formation of nodules on the tendons of flexors and thickening of annular pulleys due to repeated trauma is
- a) Bursitis
 - b) DISI
 - c) Trigger Finger
 - d) VISI
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) Myeloschisis

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. Pema Choden, a 25-year-old archer, visited the physiotherapy clinic complaining of persistent pain in her right shoulder. She described the pain as a dull ache that was exacerbated when she reached overhead or performed repetitive movements. She also noticed difficulty raising her arm fully and clicking sensation in her shoulder during certain movements. Upon examination, you noted tenderness around her right shoulder joint, particularly in the front and outer aspects. You also observed limited ROM, especially during abduction and flexion, the Neer and Hawkins-Kennedy tests were positive.
 - a) What is your diagnosis for Pema Choden's shoulder pain complaint?
 - b) Give two differential diagnoses for her condition.
 - c) Name two muscles that can potentially be involved with your diagnosis.
 - d) Write the origin, insertion, nerve supply and action of one of those muscles involved in your diagnosis.
 - e) What is your treatment/management for her shoulder condition?
2. Mr. Dophu, a 42-year-old farmer comes to you with his MRI reports. You observe that he can hardly bear weight on his left leg and his trunk is bent on to the right side. You find that there is a massive prolapse of disc at the level of L4 and L5.
 - a) Make a detailed assessment of Mr. Dophu. (2 marks)
 - b) Name two special tests that you will perform on him. (1 mark)
 - c) Describe your management plan for him. (2 marks)
3. Define cerebral palsy. Describe briefly the causes and types of cerebral palsy.
4. Explain biopsychosocial model of pain

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

Patient Information:

Name: Tshering Penjor

Age: 32

Gender: Male

Occupation: Construction Worker

Date of Injury: June 15, 2023

Level of Injury: T6 Complete Spinal Cord Injury

Cause of Injury: Fall from height at a construction site

Initial Assessment:

Tshering Penjor was admitted to the hospital with a spinal cord injury resulting from a fall at work. He sustained a T6 level complete spinal cord injury. He is currently wheelchair-bound and experiences paralysis from the waist down. The initial assessment also revealed muscle weakness, decreased sensation, and impaired balance.

Answer all questions. Illustrate with diagrams wherever necessary.

1. Describe the level and completeness of Tshering Penjor's cord injury. (4 marks)
2. Identify four potential complications associated with spinal cord injuries. (2 marks)
3. Explain the importance of proper positioning and transfer techniques for Tshering Penjor. (3 marks)
4. Discuss two goals of wheelchair mobility training during the rehabilitation process. (4 marks)
5. Provide two examples of exercises to improve upper body strength for Tshering Penjor. (2 marks)
6. What is functional electrical stimulation (FES) and how can it benefit him? (2 marks)
7. Describe two benefits of aquatic therapy for individuals with spinal cord injuries. (4 marks)
8. What are the key components of a home exercise program for Tshering Penjor to maintain and further improve his functional abilities? (4 marks)
9. Describe the stage wise physiotherapy treatment plan for Tshering Penjor. (8 marks)
10. What is an autonomic dysreflexia? State 4 symptoms of autonomic dysreflexia. (3 marks)
11. Illustrate with diagram the ascending and descending pathways. (5 marks)
12. What is neurological level? (1 mark)
13. Describe ASIA impairment scale. (4 marks)
14. Describe briefly the types of neurological bladder dysfunctions. (4 marks)

CASE II

Kinley Tshering, a 58-year-old male, was admitted to the medical ward with multiple issues. He had a history of below knee amputation on his left leg due to peripheral vascular disease. Additionally, he had a history of chronic obstructive pulmonary disease and had recently suffered a stroke resulting in right side hemiparesis.

Answer all questions. Illustrate with diagrams wherever necessary.

1. Define peripheral vascular disease and briefly explain its underlying pathophysiology. (3 marks)
2. Discuss some measures to prevent PVD/PAD. (2 marks)
3. Enumerate the differences between emphysema and chronic bronchitis. (5 marks)
4. What is obstructive and restrictive lung disease? Give two examples each. (5 marks)
5. Discuss the primary risk factors for COPD, including both modifiable and non-modifiable factors. How does smoking play a significant role in the development and progression of the disease? (5 marks)
6. What are the potential risk factors for the development of pressure ulcer with Kinley Tshering and what measures can be taken to prevent it? (5 marks)
7. Describe corticospinal tract with a diagram. (5 marks)
8. Illustrate a labelled diagram of circle of Willis. (3 marks)
9. Describe Modified Rankin Scale (mRS). Expand the acronym: FMA and ARAT (5 marks)
10. Expand the Acronym FAST in stroke. How does timely recognition impact patient outcomes? (3 marks)
11. Explain the difference between an ischemic and a hemorrhagic stroke including their underlying causes and potential treatments. (4 marks)
12. Draw a comprehensive physiotherapy management plan for Kinley Tshering. (5 marks)

TASHI DELEK