**ROYAL CIVIL SERVICE COMMISSION**

**BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2014**

**EXAMINATION CATEGORY: TECHNICAL**

**PAPER III: SUBJECT SPECIALIZATION PAPER for *PHYSIOTHERAPY***

**Date** : 12 October 2014

**Total Marks** : 100

**Examination Time** : 150 minutes (2.5 hours)

**Reading Time** : 15 Minutes (prior to examination time)

**GENERAL INSTRUCTIONS**

1. Write your Roll Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is being provided 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 **TWOSECTIONS**, namely SECTION A and SECTION B

* **SECTIONA** has two parts: Part I – 30 Multiple-Choice Questions

Part II – 4 Short Answer Questions

All questions under SECTION A are COMPULSORY.

* **SECTIONB** consists of two Case Studies. Choose only ONE Case study and answer the questions under your choice.

1. 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 any or correct Section, Part, and Question Number will NOT be evaluated and no marks would be awarded.
2. Begin each Section and Part in a fresh page of the Answer Booklet.
3. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
4. Use of any other paper including paper for rough work is not permitted.
5. You are required to hand over the Answer Booklet to the Invigilator before leaving the examination hall.
6. This paper has 10 printed pages in all, including this instruction page.

**Good Luck!**

**SECTION A**

**PART I – Multiple Choice Questions (30 Marks)**

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

1. During stair climbing UP with crutches, patient always need to perform a
2. Swing-to gait
3. Swing-through gait
4. 3-point gait
5. 4-point gait
6. Primary function of a biceps muscle is
7. Shoulder flexion
8. Elbow flexion
9. Radio-ulnar supination
10. Wrist flexion
11. When a baby is lying on the back, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ reflex causes the muscle tone of the back to increase
12. Startle
13. Asymmetrical tonic neck
14. Symmetrical tonic neck
15. Tonic labyrinthine
16. Minimum score on the glassgow coma scale an unconscious person can have is
17. 3
18. 2
19. 1
20. 0
21. Sensory innervation of the face is established through
22. Facial nerve
23. Trigeminal nerve
24. Abducent nerve
25. Spinal accessory nerve
26. Which of the following statements is TRUE regarding motor learning?
27. Demonstration/ modeling is not helpful to learn a skill
28. Feedbacks do not help in learning a skill
29. Learning a new motor skill is an active process
30. Only a consistent practice without variability helps in learning a skill
31. Weight bearing through axillary pad in crutch walking might lead to neuropraxia of
32. Axillary nerve
33. Radial nerve
34. Median nerve
35. Ulnar nerve
36. APGAR is a quick test performed on a new born at one and five minutes after delivery. A score of ONE under grimace indicate
37. No response to stimulation
38. Feeble cry to stimulation
39. Cry or pull away to stimulation
40. Strong, lusty cry
41. Which of the following is NOT the principal aim of First Aid?
42. Preserve life
43. Protect from further injury
44. Relieve pain
45. Provide non-painful senescence
46. A delayed onset muscle soreness (DOMS) may appear after unaccustomed activity and seem to be more severe after
47. Concentric exercises
48. Eccentric exercises
49. Isotonic exercises
50. Isometric exercises
51. Tendon vascularity may be compromised at the site of
52. Friction
53. Torsion
54. Compression
55. All of the above
56. An athlete you are observing has increased load on medial longitudinal arch, he complains of pain over Achilles and tibialis posterior tendons, and has increased load on plantar fascia and plantar musculature. What would be the possible patho-mechanics in his foot?
57. Excessive pronation
58. Excessive supination
59. Ankle equinus
60. Rear foot varus
61. During the ‘deceleration phase’ of throwing, which group of muscles works to counter high forward-pull force?
62. Eccentric contraction of external rotators, scapula stabilizers, and posterior fibers of deltoid
63. Eccentric contraction of internal rotators, scapula stabilizers, and anterior fibers of deltoid
64. Concentric contraction of external rotators, scapula stabilizers, and posterior fibers of deltoid
65. Concentric contraction of internal rotators, scapular stabilizers, and anterior fibers of deltoid
66. The ability to move a joint smoothly throughout a full range of movement define the antagonist muscle that has
67. Good flexibility
68. Good strength
69. Excessive flexibility
70. Sub-maximal strength
71. Articular cartilage nourishment, prevention of joint stiffness, and alignment of healing fibers are best achieved through
72. Continuous passive motion
73. Isometric exercises
74. Progressive resistance exercises
75. Active range of motion exercise
76. Which of the following is NOT true with respect to cardiovascular changes in elderly person?
77. Orthostatic hypotension
78. Increased resting blood pressure
79. Decreased blood coagulability
80. Irregular heart beats
81. All the following are risk factors for Fall in elderly person EXCEPT
82. Recurrent falls
83. Denial of aging
84. Use of psychotropic and cardiovascular drugs
85. Safety education
86. Passang, a 20 year old footballer comes to you with complaints of knee pain. He said he injured his knee while playing football the other day. There is a mild swelling on the medial aspect of his knee, with grade 3 tenderness on the attachment sites of medial collateral ligament (MCL). The valgus stress test reveals increased laxity but you feel a definite resistance at the end. You therefore suspect
87. A grade I MCL sprain
88. A grade II MCL sprain
89. A grade III MCL sprain
90. A grade IV MCL sprain
91. Ipsilateral motor deficits and contralateral pain and temperature sensation loss is observed in
92. central cord syndrome
93. Anterior cord syndrome
94. Brown-sequard syndrome
95. Posterior cord syndrome
96. Rigidity, tremor, bradykinesia and impaired postural reflexes are characteristic signs of
97. Dementia
98. Parkinson’s disease
99. Cerebellar dysfunction
100. Meningitis
101. Spinal cord injury at cervical region may result in the following disability
102. Paraplegia
103. Quadriplegia
104. Diplegia
105. Hemiplegia
106. Filumterminale of the spinal cord descends till
107. L1 vertebra
108. L2 vertebra
109. S1 vertebra
110. Coccyx
111. Phenytoin is used for the management of
112. Spasticity
113. Seizures
114. Autism
115. Behavioural problem
116. Ligament that restricts the excess posterior translation of femur over tibia
     1. Lateral collateral ligament
     2. Medial collateral ligament
     3. Anterior cruciate ligament
     4. Posterior cruciate ligament
117. The main reason for providing crutches in a patient with osteomyelitis for protected weight bearing is to PREVENT
118. Acute fracture
119. Stress fracture
120. Pathological fracture
121. Avulsion fracture
122. A patient enters the hospital complaining of chest pains. The results of an ECG indicate a depression in the S-T segment of the ECG. The most likely reason for this observation would be
123. A first-degree AV node block.
124. Atrial flutter.
125. Myocardial ischemia.
126. Tachycardia.
127. The common site for osteomyelitis is
128. Metaphysis
129. Diaphysis
130. Epiphysis
131. Epiphyseal plates
132. Which of the following muscles unlock the knee?
133. Vastus medialis obliqus
134. Poplitues muscle
135. Gastrocnemius muscle
136. Sartorius muscle
137. Shoulder abduction and adduction movement occur in
138. Sagittal plane
139. Scapular plane
140. Coronal plane
141. Thoracic plane
142. Which of the following fractures is the dinner fork deformity seen?
143. Colle’s fracture
144. Monteggia fracture
145. Galeazzi fracture
146. Maisonneuve fracture

**PART II – Short Answer Questions (20 marks)**

**Answer ALL the questions. Each question carries 5 marks.**

* + - 1. Explain the sequence of Gross Motor Development in a child.
      2. Define Incontinence, describe types of Incontinence and list the management.
      3. Mention benefits and techniques of Cryotherapy. Explain physiological mechanism that possibly results in the benefits.
      4. List 5 causes of accumulations of chest secretions in the respiratory tracts. Mention methods of prevention and removal of chest secretions in a patient.

**SECTION B**

**Case Study**

**CASE 1 (50 marks)**

A 51-year old male construction worker with no previous history of back pain experienced sudden stabbing pain emanating from the low back several weeks ago after lifting a heavy hose. He dropped the hose and could not immediately straighten due to severe pain. After 10 minutes, pain had subsided somewhat and he continued working, using a 20 Kg jackhammer in a flexed posture. After half hour operating the jackhammer his back pain recurred and became increasingly severe over the next several hours to the point where he could not bend or straighten. A coworker drove him home and he went to bed as lying down, while still painful, felt more comfortable than standing or sitting. After several days in bed, he was able to get up for trips to the toilet and meals, although sitting in either a hard or soft chair aggravated pain. Ten days after the onset of symptoms he was walking up a hill and experienced sudden severe pain in the middle of the right buttock with radiation down the posterolateral aspect of the thigh and lateral aspect of the leg and ankle as corresponding to diminishment of back pain. Once leg pain became dominant, pain was aggravated by sitting and changing position and relieved when standing and walking. Coughing, sneezing, and straining during bowel movements aggravated buttock pain.

**Observation**: the patient is strong and muscular and normally stands erect without deformity. No muscle wasting observed. A loss of lumbar lordosis is noted.

**Palpation**: a mild tenderness is present on firm palpation in the lumbosacral region. There is no palpable step at the lumbosacral region.

**Rangeofmotion**: spinal flexion is markedly restricted and causes radiating pain to the right buttock. Extension is negative, as is bilateral bend, although pain occurs in the right buttock when bending to that side.

**Strength**: patient walks on heels, toes, and the lateral and medial borders of his feet without difficulty. The right extensor halluces longus (EHL) is slightly weaker than the left. The right gluteus medius muscle is 3.

**Flexibility**: there is normal soft tissue extensibility in the lower extremity musculature.

**Sensation**: there is normal sensation in both lower limbs except for a small area over the dorsomedial aspect of the right forefoot, where there is diminution to pinprick.

**Deeptendonreflexes**: knee and ankle reflexes are brisk and equal, whereas plantar response is downward. There is mild diminution of right tibialis posterior reflex.

**Sacroiliacandhipjoints**: negative Gaenslen test and Faber manueuver.

**Peripheralcirculation**: the lower extremity pulses are intact.

**Specialtests**: the right straight raise (SLR) is limited to 30 degree and there is positive Lasegue sign with pain radiating down the posterior aspect of the thigh. Left SLR is 75 degree and negative Lasegue. Slump test on sitting is positive on the right. Femoral stretch test is bilaterally negative. A prone press up somewhat relieves and centralizes pain.

**Answer all questions**

1. What is the most likely cause of this patient symptom? Explain briefly, the patho-mechanics leading to cause of the symptoms. (5 marks)
2. List three initial interventions you would do to this patient. (3 marks)
3. Draw a labeled diagram of an intervertebral disc. Mention its function. (5 marks)
4. Explain how coughing, sneezing, and straining during bowel movement lead to increased symptoms in this patient. (2 marks)
5. What are the root values of deep tendon reflexes of patellar tendon, tibialis posterior, and tendon Achilles? Mention methods of testing each deep tendon reflex. (5 marks)
6. Explain the different pattern of radicular pain in L5 and S1 nerve roots compression. (4 marks)
7. What is trunk list or tilt? Explain the mechanism of trunk list away and towards the same side of the leg symptoms. (3 marks)
8. What is the diurnal SLR test and what is its clinical significance? Will the above patient have positive diurnal straight leg raise test? (3 marks)
9. The above patient is negative for femoral stretch test bilaterally. What nerve roots do you test with femoral stretch test? How will you differentiate between poor hamstring flexibility and true sciatica limiting the SLR? (3 marks)
10. How will you differentiate piriformis syndrome from disc lesion on the basis of pain complaints, palpation, and resisted movement? (3 marks)
11. If the above patient came to you on the same day of his back pain (injury) before his friend drove him home, what intervention and advices would you have given him? (4 marks)
12. The above patient has got centralization of symptoms with prone press up; explain series of extension protocol you will use to treat his back. Explain effects of extension on intervertebral disc. When will you start functional reeducation or flexion exercise? (5 marks)
13. List three indications for surgery in patients with low back pain. List your physiotherapy intervention plan in a patient who had undergone discectomy, starting from first post-operative day. (5 marks)

**CASE 2 (50 marks)**

Singay is a 43 year old male who underwent a decompression surgery for spinal tumor at T2. His sensation is intact to a wisp of cotton at T3 and to pinprick at T4, and total sensory loss from T5 and down. His grip strength is normal bilaterally. He has got ASIA A impairment.

**Answer all questions**

* 1. Explain neurological level. What is the neurological for Singay? (2 marks)
  2. Explain American Spinal Injury Association classification of spinal cord injury. (5 marks)
  3. Mention areas of skin at risk of developing pressure sores if Singay stays in recumbent position in bed or in a wheelchair. How will you teach Singay and his family members to prevent pressure sores? Explain patho-physiology of pressure sore development. (5 marks)
  4. Will Singay be able to perform huff and cough to expectorate chest secretions? Explain huff and cough, and the muscles recruited for the same. How can you passively assist coughing in spinal cord injury patient? (4 marks)
  5. What is Autonomic dysreflexia? Is Singay at risk of developing autonomic dysreflexia and why? Mention causes, signs and symptoms of autonomic dysreflexia. (5 marks)
  6. Mention 3 ways to strengthen Singay’s upper limb. (3 marks)
  7. What is the importance of hamstring flexibility? What minimum degree of straight leg raise should Singay achieved? (2 marks)
  8. What is spasticity? Mention triggers, benefits, and problems of spasticity. How will you manage spasticity? (5 marks)
  9. What is a mobility orthosis? Explain wheelies and its purpose that you may need to teach Singay? How will you teach Singay and his family members to ride wheelchair on the stair? (4 marks)
  10. Explain bladder and bowel training programs for Singay. (5 marks)
  11. Mention five barriers Singay might face once he is discharged from hospital. Explain how you will modify his kitchen area. (5 marks)
  12. List three effects of disuse on Singay’s lower limbs over the years. (3 marks)
  13. What will you need to train a paraplegic patient to walk? Explain the gait pattern. (2 marks)

\*\*\***TASHI DELEK**\*\*\*