ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2019
EXAMINATION CATEGORY: TECHNICAL

PAPER III: SUBJECT SPECIALISATION PAPER FOR PHYSIOTHERAPY

Date : October 13, 2019
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 Questions

      All 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 in 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 are required to 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 team of healthcare providers must work together to manage a patient with Parkinson's disease. The physiotherapist is mainly tasked to promote which of the following activities?
   a) Adaptation to changing abilities essential for work.
   b) Domestic activities.
   c) Mobility.
   d) Effective swallowing.

2. A patient with myasthenia gravis would usually develop weakening of the laryngeal and pharyngeal muscles involved with swallowing. To ensure safety and good nutrition, the physiotherapist educates the patient and care provider to do which of the following?
   a) Eat with bigger bites of food.
   b) Schedule meals after an activity.
   c) Care provider gives cues when the patient is eating.
   d) Care provider should learn how to perform cardiopulmonary resuscitation properly.

3. A patient complains of aching pain in the left leg, which becomes more severe in intensity at night. Standing relieves the pain. On assessment, the affected extremity feels cool and appears red in dependent position. A diagnosis of thromboangitis obliterans is made. Which of the following interventions is the most important for this condition?
   a) Vasodilator therapy.
   b) Prevention of injuries on the upper and lower extremities.
   c) Smoking cessation.
   d) Keeping the extremities warm.

4. A physiotherapist is writing a questionnaire that is to be sent to and answered by patients after discharge. The therapist would like to create open-ended questions in the questionnaire. Which of the following is an example of an open-ended question?
   a) "Did the physiotherapy sessions help you achieve your goals?"
   b) "How have your motor and sensory functions changed after the treatment program?"
   c) "Did the sessions of exercises help your pain level?"
   d) "Did the interventions address your main concerns?"

5. A female patient with swelling, redness, and pain in the leg is suspected of thrombophlebitis. There are three factors, called Virchow's triad, associated with thrombophlebitis or venous thrombosis. Virchow's triad consists of the following EXCEPT
   a) Stasis of blood.
   b) Blood vessel damage.

c) Occlusion.
d) Coagulation of blood is increased.

6. Compared to an individual who lives a sedentary lifestyle, a physically-fit person usually demonstrates a different physiological profile. The following are the characteristic features of improved endurance EXCEPT
   a) Greater muscle strength.
   b) Better adaptation of circulation and respiration to effort.
   c) Lower blood pressure on exercise.
   d) Lower pulse rate on exercise.

7. Which of the following veins is least likely involved in deep vein thrombosis?
   a) Peroneal vein
   b) Popliteal vein
   c) Posterior tibial vein
   d) Great saphenous vein

8. Which of the following is the strongest ligament in the knee?
   a) Medial collateral
   b) Posterior cruciate
   c) Lateral collateral
   d) Anterior cruciate

9. Which of the following ligaments control the passive screw home mechanism or locking of the knee joint?
   a) Medial and lateral collateral ligaments.
   b) Anterior and posterior cruciate ligaments.
   c) Medial collateral and posterior cruciate ligament.
   d) Lateral collateral ligament and anterior cruciate ligament.

10. In the cervical region, which of the following nerve roots is the most commonly compressed?
    a) C5
    b) C6
    c) C7
    d) C8

11. The cardiovascular system and pulmonary system show the most significant changes in response to increased activity or inactivity. A patient admitted for an exercise program is expected to demonstrate which of the following as a normal response to exercise?
    a) Decreased systolic blood pressure.
    b) Decreased cardiac output.
    c) Increased peripheral vascular resistance.
    d) Increased tidal volume.

12. A patient with angina is referred to the clinic after a total knee replacement. The patient has a history of angina, which is usually relieved by rest and intake of nitroglycerin. The pain occurs with increased activity or stress. Based on the above information, what type of angina that the patient has?
    a) Unstable angina
    b) Variant angina
    c) Prinzmetal angina
    d) Stable angina

13. At higher altitudes, patient experiences dizziness, nausea, weakness, decreased vision, and headache. The physiotherapist informs the patient that these symptoms are mainly caused by lowered partial pressure of ambient oxygen at higher altitudes. Which of the following is a long-term response to decreased partial pressure of ambient oxygen?
    a) Increased stroke volume.
    b) Increased aerobic power.
    c) Increased number of red blood cells.
    d) Decreased amount of haemoglobin.

14. Which of the following findings a patient with chronic obstructive pulmonary disease is expected to have?
    a) Decreased residual volume.
    b) Increased forced vital capacity.
    c) Increased total lung capacity.
    d) Increased forced expiratory flow.

15. The application of electrical stimulation has the following effects during rehabilitation EXCEPT
    a) Reduce tissue viscosity.
    b) Enhanced protein synthesis.
    c) Relaxed muscle spasm.
    d) Re-establish lymphatic flow.

16. If a physiotherapist decides to use a modality that uses the convection mechanism of heat exchange, which of the following is most likely considered?
    a) Electrical heating pad.
    b) Whirlpool.
    c) Warm compresses.
    d) Ultrasound.

17. Which of the following is considered as the most effective orthosis for use in controlling rotation and lateral bending at c1-c3?
    a) Sternal-occipital-mandibular orthosis.
    b) Halo device.
    c) Philadelphia collar.
    d) 4-poster brace.

18. A 30-year-old patient with chronic low back pain secondary to spinal stenosis is to have lumbar traction applied. Which of the following actions by the physiotherapist demonstrates the correct technique of applying this type of traction?
    a) The patient is placed in a seated or supine position.
    b) The pelvic belt is hooked around the patient; the top edge is around the iliac crest.
    c) The thoracic belt is hooked around the patient; the inferior margin is slightly above the lower ribs.
    d) A force of ¼ to ½ of the patient's lower extremity is initially placed.

19. Upper-limb orthoses are classified according to their function. Which of the following upper-limb orthoses augments prehension with more proximal joint movements?
    a) Assistive
    b) Substitutive
    c) Protective
    d) Corrective

20. Which of the following interventions is the most effective in the treatment of deep vein thrombosis?
    a) Massage therapy.
    b) Application of cold compress to the affected extremity at least four times daily.
    c) Elevation of legs 10 to 20 minutes every few hours.
    d) Ambulation.

21. Which of the following heating modalities is considered as the best method for large-area deep heating?
    a) Microwave diathermy.
    b) Hydrotherapy.
    c) Ultrasonography.
    d) Shortwave diathermy.

22. Which of the following accurately describes percutaneous electrical nerve stimulation (PENS)?
    a) It is based on a summation of two alternating current signals that come in slightly different frequencies.
    b) When the signals are in phase, they summate to an amplitude sufficient to cause stimulation.
    c) It uses two, four, or six applicators, delivering higher currents than TENS.
    d) It uses acupuncture-like needle probes to deliver electrical stimuli at the precise level.

23. Cryotherapy is contraindicated to patients with the following conditions EXCEPT
    a) Hypertension
    b) Raynaud's disease
    c) Upper motor neuron spasticity
    d) Rheumatoid arthritis

24. A long-leg cylindrical plaster cast is applied to a 12-year-old patient with a tibia-fibula fracture. Before discharge, the physiotherapist teaches the child on how to take care of the cast. The therapist is correct to instruct which of the following as a cast-care intervention?
    a) Keep the cast and extremity flat on bed.
    b) Petal the cast to prevent crumbling.
    c) Use a blow dryer on a hot air setting to relieve itching.
    d) Allow the cast to dry in 24 hours.

25. Which of the following deformities is corrected first in the traditional non-operative management of the club foot?
    a) Equinus
    b) Forefoot supination
    c) Pronation
    d) Forefoot adduction

26. The therapist ensures to include which of the following areas in the test to determine whether or not a patient has a motor incomplete spinal cord injury?
    a) Medial aspect of the dorsum of foot
    b) Anal sphincter
    c) Posterior aspect of the thigh
    d) Groin

27. A patient complains of achy pain in the lower back and sacroiliac joints. Morning stiffness is also reported. During evaluation, a physiotherapist evaluates for forward flexion and lumbar mobility. Which of the following tests are used to measure the lumbar flexion?
    a) Schober test
    b) Slump test
    c) Hip drop test
    d) Nachlas test

28. A physiotherapist is assessing the respirations of a female patient with neurological deficits. The therapist notes irregular respiratory pattern with pauses at the end of inspiration and expiration. This finding indicates dysfunction in which of the following parts of the brain?
    a) Cerebral hemisphere
    b) Medulla
    c) Pons
    d) Basal ganglia

29. A patient reports brief and paroxysmal facial pain, which is described as severe in intensity and stabbing in quality. The pain typically starts on one side of the cheek and then radiates to the jaw, top lip, teeth, and gums, and to the side of the nose. The pain is usually triggered by vibration, light touch, and face washing. The patient is most likely diagnosed with
    a) multiple sclerosis.
    b) temporomandibular joint disorder.
    c) trigeminal neuralgia.
    d) migraine.

30. Which of the following medications is most likely prescribed to the patient as it is considered the first-line therapy for trigeminal neuralgia?
    a) Gabapentin
    b) Carbamazepine
    c) Phenytoin
    d) Baclofen

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. Define Cerebral Palsy. List risk factors of Cerebral Palsy and briefly explain types of cerebral palsy. (1+1+3 marks)

2. What will be the functional level of a patient with complete spinal cord injury with L1 neurological level? Mention four goals and the therapeutic interventions toward these goals. (1+4 marks)

3. Mention at least five differences between vascular and neurogenic claudication. (5 marks)

4. List indications and uses, side effects, precautions, and interactions of the drug Ibuprofen. (2+1+1+1 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

Mr. Nado, a 52-year-old male is admitted in the ward with complaints of abdominal distension for the last four days, generalized weakness for last 14 days, decreased appetite and weight loss for over 15 days. On examination, the patient is conscious and oriented, no cyanosis or clubbing. The vitals recorded were: BP: 120/80, RR: 20b/m, PR: 80b/m and SPO2: 89 % in RA. He is not diagnosed with any other conditions in the past. He is a chronic smoker, alcoholic, comes from low socioeconomic status, and is married. He doesn't have any allergies to any medications.

The lab investigations revealed following:

CBC	HB	12g/DL
	RBC	3.2M/micro L
	WBC	6700/mm3
	ESR	20mm/hr
LFT	SGOT	169microL
	SGPT	162 microL
	ALP	58 micro L
	Albumin	3.1 gm/dl
	Globulin	21 gm
RFT	BUN	12mg/dL
	Sr.Cr.	0.7mg/dL

The Hbs Ag was negative and ultrasonography showed coarse echo texture, enlarged liver mass and wall thickening of the gallbladder.

1. Define liver Cirrhosis. (2 marks)
2. Mention four functions of liver. (4 marks)
3. What are the cardinal signs or clinical manifestations of liver disease? (4 marks)
4. What are the stages of liver failure? (2 marks)
5. How will you ensure and institute safe mobility program for such patients? (4 marks)
6. What are the guiding principles of starting rehabilitation in acute stage for such patients? (5 marks)
7. Define jaundice. Draw a clear and labelled diagram of Hepato Billiary tree? (1+3 marks)
8. List four Physiotherapy Goals for such warded patients. (4 marks)
9. What gait abnormalities will you observe in patients with distended abdomen? Which group of muscles will you focus to strengthen? (1+1 marks)
10. The patient complained of tingling and numbness while you made him walk around the bed. Explain the patho-physiology of the complaint? (2 marks)
11. Mention four conditions besides alcohol that can cause liver disease. (1+1+1+1 marks)
12. The literature says that fatty liver with alcohol consumption will increase the risk of ALD. As a physiotherapist, what advice will you give to the patient? (3 marks)
13. Changing the lifestyle of patient is important to promote health. What is the difference between the sedentary lifestyle and physical inactivity? (3 marks)
14. Mention three medical complications the patient will develop if he does not stop drinking alcohol? (3 marks)
15. If the patient scored very badly on Child Pugh Score which measures the prognosis of patient, mention three ways to break the news to family members or the patient? (2 marks)
16. Provide three pieces of advice to people with chronic alcohol user. (2 marks)

CASE II

A 70-year-old man, a known case of right lims weakness has been admitted to the ward with complaints of cough, fever, loss of appetite and decreased activity for a week. The family members deny any changes in his behaviour or his mental status. He has been diagnosed with left middle cerebral artery stroke due to hypertension. He underwent rehabilitation therapy in the physiotherapy outpatient department since he lives with his children near the hospital. Upon examination his power in the right hand is grossly 2/5 across all the joints with marked flexor tone and right leg has the power of 4/5 with less tone. He used a cane initially but he can now manage to walk independently without using walking aids. Investigation findings included increased cholesterol level in his lab report; A-fib in the ECG; and homogenous opacities on the upper lobe of his left lung in the chest X-ray. Other system evaluation was unremarkable.

1. What is WHO definition of Stroke? (2 marks)
2. Differentiate between CVA and Transient Ischemic Stroke. (2 marks)
3. Explain patho-physiology of A-Fib and ischemic Stroke. (2 marks)
4. What could have led to abnormal findings in his Chest X-ray which was clinically explained by cough, fever and body ache? (1 mark)
5. Can you predict the complete blood count abnormalities in this case? (1 mark)
6. State why MCA Stroke is more common. (1 mark)
7. Mention at least five guiding principles of neuro-rehabilitation. (5 marks)
8. Define and explain neuroplasticity for stroke rehabilitation. (1+4 marks)
9. Predict the pattern of movement of his right upper limb in this case. (1 marks)
10. Explain in detail the chief components of neurological assessment. (10 marks)
11. Draw a clear and labeled diagram of the brain showing the primary functional areas of brain. (5 marks)
12. Describe speech and swallowing assessment for the patient described in the case above. (2 marks)
13. What will be his short term and long-term goals? (1.5+1.5 marks)
14. How will you differentiate between ischemia and bleed on Computer Tomographic Scan of human brain? (1 mark)
15. How will you differentiate between spasticity and rigidity? (2 marks)
16. What are the benefits of using outcome measures? Explain any two outcome measures to explain patient's improved chest clearance and right upper limb movement pattern. (1+1.5+1.5 marks)
17. What are common neuro-physiotherapeutic approaches that you will apply to this patient to improve his upper limb power and better swallowing? (3 marks)

TASHI DELEK