(University of Choice)

MASINDE MULIRO UNIVERSITY OF

SCIENCE AND TECHNOLOGY

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2019/2020 ACADEMIC YEAR

FOURTH YEAR, FINAL QUALIFYING EXAMINATIONS

FOR THE DEGREE OF

BACHELOR OF SCIENCE IN PHYSIOTHERAPY

COURSE CODE: **BSP 433d**

COURSE TITLE: **Rehabilitation Sciences Paper I**

DATE: TUESDAY 26TH JANUARY 2021 **TIME: 9.00-12.00 N00N**

INSTRUCTIONS TO CANDIDATES

Answer all Questions

Sec A: Neurophysiotherapy

Sec B: Cardiorespiratory Physiotherapy

Sec C: Orthopedics and Traumatology

Sec D: Sports Medicine

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 12 Printed Pages. Please Turn Over.

SECTION A: NEUROPHYSIOTHERAPY

PART A: Multiple Choice Questions

1. A 58-year-old man had a left hemisphere stroke that left him with right sided weakness and speech problems. On assessment, his speech was fluent but lacked content and included frequent paraphasias. The patient's comprehension seemed intact but his ability to name objects was mildly impaired. The most striking finding was the patient's inability to repeat words or sentences. The most probable diagnosis of this communication impairment is:
   A. Wernicke's aphasia
   B. Conduction aphasia
   C. Sensory trans cortical aphasia
   D. Motor trans cortical aphasia
   E. Broca's aphasia
2. A 19-year-old man was admitted to hospital following a road traffic accident. In the accident and emergency department, the patient assumed a decorticate posture with his shoulders flexed and adducted. The patient responded to pain by opening his eyes and his arms attempted to remove the painful stimulus (supraorbital pressure). The patient could not respond to simple commands and his verbal responses were incomprehensible moans and groans with no clear words spoken and no eye opening. The patient's Glasgow Coma Score is:
   A. 6
   B. 7
   C. 8
   D. 9
   E. 10
3. Two months after onset, a patient with a C4 complete spinal injury asked about the probable functional outcome for the injury. In the future, this patient should be able to:
   A. Eat independently using an aid
   B. Help in dressing the upper half of the body
   C. Transfer across level surfaces with help
   D. Operate an environmental control system
   E. Drive an adapted car using hand straps
4. A 34-year-old man with dystrophia myotonica has several problems because of the severity of his myotonia. He mentioned dysarthria and hand function as specific problems and enquired if anything could be done to help. The first recommendation should be:
   A. Regular stretching exercise
   B. Regular strengthening exercise
   C. 'Warming-up' technique
   D. Phenytoin
   E. Neostigmine
5. A 21-year-old man presented to the rehabilitation clinic with a diagnosis of Becker's muscle dystrophy. The condition was diagnosed when the patient was 12 years old. He used callipers to mobilise for short distances but relied on a lightweight wheelchair for

outdoor mobility. The patient had several questions about his condition. Which of the following statements is true:

A. Risk of cardiac involvement is minimal
B. The patient's offspring will have a 50% chance of developing the condition
C. The patient should expect a normal life expectancy
D. Urinary incontinence is a recognised feature of the disease
E. Osteoporosis is a recognised late complication

6. A 23-year-old man with a complete thoracic spinal injury developed headache, flushing and sweating as he was catheterised. A blood pressure of 210/140mm Hg was rapidly controlled by appropriate antihypertensive drugs. Diagnosis of autonomic dysreflexia was suspected. This disorder is only seen in spinal injuries with a level above:
   A. T6
   B. T7
   C. T8
   D. T9
   E. T10
7. Primitive reflexes stimulated by which position?
   A. Position of limb
   B. Position of neck
   C. Position of spine
   D. None of above
8. Intentional tremor will be seen in
   A. Sleep
   B. Rest
   C. During voluntary movement
   D. All of above
9. Gag reflex is assessed to know the lesion of which cranial nerve?
   A. 9 & 10 cranial nerve
   B. 10 & 11 cranial nerve
   C. 8 & 9 cranial nerve
   D. None of above
10. Claw hand is present in which lesion?
   A. Ulnar nerve lesion
   B. Median nerve lesion
   C. Radial nerve lesion
   D. None of above
11. Neck range is assessed for the diagnosis of?
   A. Meningeal. irritation
   B. Muscle spasm
   C. Cervical spine pathology
   D. All of above
12. When you are examining a patient, you find several beats of ankle clonus. Given this finding, you are likely to also find which one of the following?
   A. Planter reflex
   B. Hyperreflexia
   C. Rigidity

D. Muscle atrophy

13. A right cerebral hemisphere infarct would cause symptoms on the _____ side of the body
    A. Right
    B. Left
    C. Both
    D. None
14. A female client is admitted to the hospital with asymmetry to her smile and drooling from the left side of her mouth. On examination, she can wrinkle her forehead bilaterally. She most likely has which one of the following
    A. Right 7th cranial nerve paresis
    B. Left 7th cranial nerve palsy
    C. Right 7th cranial nerve palsy
    D. Left 7th cranial nerve paresis
15. An example of apraxia would be which one of the following
    A. Patient cannot demonstrate actions
    B. Patient has difficulty with understanding the emotional component of said speech
    C. Patient has difficulty saying words
    D. Patient cannot name colors

PART B: Short answer questions (SAQs) 16 Marks

1. Discuss the PNF principles

2. Describe the ontogenic motor patterns

SECTION B CARDIORESPIRATORY PHYSIOTHERAPY

PART A MCQ

1. A 59-year-old male patient is being evaluated for left shoulder pain. The patient reports that his shoulder pain is closely associated with activity, including stress at work. The patient reports that at worst, the pain radiates into his neck, and he feels shortness of breath which subsides with rest. What would the MOST appropriate intervention be?

    a) Begin passive range of motion exercises within the pain free range of motion.
    b) Postpone treatment and refer the patient to his physician for further evaluation.
    c) Apply modalities to the shoulder and instruct the patient on activity modification.
    d) Begin the patient with rotator cuff exercises within the pain reduced range of motion and instruct patient on activity modification.

2. A 35-year-old patient with a complete T5 spinal cord injury is working on supine to sit transfers on the mat table when he suddenly appears flushed and complains of his heart pounding. Upon examination, his blood pressure is 180/100 and he has a pounding headache. The most appropriate INITIAL course of action is:
    a) Lay the patient supine and notify the patient's physician.
    b) Sit the patient up and notify the patient's physician.
    c) Allow the patient to rest longer between sets of activity.
    d) Initiate core strengthening exercises to maintain intra-abdominal pressure.
3. A patient with cystic fibrosis is receiving postural drainage and percussion for the right lung's middle lobe. What is the MOST appropriate patient position?
    a) Supine on a wedge with the left shoulder elevated on pillows with the head lower than the pelvis.
    b) Supine on a wedge with the right shoulder elevated on pillows with the head lower than the pelvis.
    c) Prone with the right shoulder elevated on pillows and the head on the same plane as the pelvis.
    d) Prone with the left shoulder elevated on pillows and the head on the same plane as the pelvis.
4. Physical activity has been hypothesized to decrease the occurrence and severity of coronary heart disease. Which of the following does not occur as a result of regular training program?
    a) An increase in coronary collateral vascularization
    b) An increase in serum lipid levels
    c) An increase in red blood cell mass and blood volume
    d) An increase in myocardial efficiency.

5.A patient develops a pulmonary embolism post operatively. The patient is haemo-dynamically stable and began anticoagulant yesterday. Which of the following procedures would be inappropriate?

    a) Deep and segmental breathing
    b) Extended expiration

c) Postural drainage
d) Percussions and vibrations

6.Restrictive lung diseases limit to varying degrees the maximum volume of air that can be inhaled and exhaled. Which of the following is not a restrictive lung disease?

a) Bony abnormality of the chest
b) Paralysis of respiratory muscles
c) Pneumonia
d) Emphysema

7.Exercise can cause a significant increase in the body's cardiac output. During exercise there is a major redistribution of the elevated cardiac output. During mild to moderate exercise what changes would you expect to take place?

a) An increase in cerebral and coronary blood flow
b) An increase in cerebral and active skeletal muscles blood flow
c) An increase in coronary and active skeletal muscle blood flow
d) A decrease in cerebral and coronary blood flow

8.There are a variety of factors which can significantly influence normal respiration including age, sex, stature and exercise. Which statement describing these factors is not accurate?

a) The respiratory rate of a newborn is between 30 and 60 breaths per minute.
b) Men generally have larger vital capacity than women.
c) Stout or obese subjects generally have a larger vital capacity than tall, thin individuals
d) Respiratory rate and depth will increase as a result of increased oxygen consumption and carbon dioxide production.

9.An 82-year-old patient undergoing chest physiotherapy post operatively after hip fracture surgery. She has a history of multiple compression fracture of thoracic vertebrae. The greatest amount of caution would be taken in the administration of-----

a) Diaphragmatic breathing exercises.

b) postural drainage

c) Therapeutic percussion.

d) all the above

10. Which of the following instructions would be **MOST** appropriate to give a patient who is learning pursed-lip breathing?

a) Exhale through pursed lips while contracting abdominal muscles

b) Exhale by blowing air out forcefully between pursed lips

c) Exhale by relaxing air out through pursed lips

d) Exhale in quick short puffs through pursed lips

11. A 27-year-old John Karuiki presents to emergency department with severe diarrhea. When he is supine, his blood pressure is 90/60mmHg (decreased) and his heart rate is 100 beats/ per minute (increased). When he is moved to standing position, his heart rate further increases to 120 beats/min. Which of the following statement accounts for the further increase on the heart rate upon standing?

a) Decreased total peripheral circulation

b) Increased vasoconstriction

c) Increased contractibility

d) Decreased venous return

12. Immediately following strenuous and vigorous exercise, which of the following is most likely to occur?

a) Blood will be rapidly diverted to the digestive organs

b) The skin will be cold and clammy

c) Capillaries of the active muscles will be engorged with blood

d) Blood flow to the kidneys quickly increases

13. Which of the following is a difference between cardiac muscle and skeletal muscle?

a) Unlike skeletal muscle cells, cardiac muscle cells do not rely on an influx of calcium ions for depolarization

b) Unlike skeletal muscles, cardiac muscles do not use a sliding filament mechanism for contraction.

c) Unlike skeletal muscles, cardiac muscles are not striated.

d) Unlike skeletal muscles cells, cardiac cells can be auto rhythmic.

14.A client with COPD complains of headache and a "racing" heart; he is also restless and somewhat confused. Which problem would the nurse suspect?

a) Respiratory acidosis

b) Respiratory alkalosis

c) Metabolic acidosis

d) Metabolic alkalosis

15.A patient is getting discharged from a SNF facility. The patient has a history of severe COPD and PVD. The patient is primarily concerned about their ability to breath easily. Which of the following would be the best instruction for this patient?

a) Deep breathing techniques to increase O2 levels.

b) Cough regularly and deeply to clear airway passages.

c) Cough following bronchodilator utilization

d) Decrease CO2 levels by increase oxygen take output during meals.

PART B SAQ

1. Observation of the breathing pattern gives further information concerning the type and severity of respiratory diseases;

Describe the four (4) abnormal breathing pattern. **(8marks)**

SECTION C ORTHOPEDICS AND TRAUAMTOLOGY

PART A: Multiple Choice Questions

1. What are the current imaging recommendations for low back pain?

a) Imaging is only recommended for severe progressive neurological deficits
b) Imaging is never recommended
c) Imaging is recommended if you strained your back from lifting something
d) Imaging is only recommended if you have pain on one side that radiates down the leg but has not strength deficits

2.What scenario would you use Overpressures for the lumbar spine?

a) When you do AROM and they feel pain in their low back
b) When you do AROM and they feel pain in their low back and radiating pain to a LE
c) When you do AROM and they feel no reproduction of their pain
d) When you do AROM and they start to feel weakness

3. What grading for Neuro reflexes is considered normal?

a) 0
b) 1+
c) 2+
d) 3+
e) 4+

4. With lumbar flexion AROM, what is considered normal lumbar spine and hip flexion?

a) degrees of hip flexion, 10 degrees of lumbar spine flexion
b) degrees of hip flexion, 5 deg of lumbar spine flexion
c) degrees of hip flexion, 20 deg of lumbar spine flexion
d) It doesn't matter the specific degrees as long as they can touch the floor

5. What is the most appropriate assessment for someone within the ICF category low back pain with mobility deficit?

a) Prone Instability Test
b) Thomas Test
c) Unilateral and central PAs
d) Marcher's Test

6. What is the most appropriate abdominal strength assessment for a patient with excessive rotation in gait?

a) Lower abdominal Strength and Coordination
b) Quadruped rock back looking for excessive extension
c) Gluteal strength MMT
d) Bent knee fall out

7. If you see a patient lying supine and they demonstrate excessive extension, what test would this cue you to use?

a) Thomas test

b) Unilateral or Central PAs
c) SI Distraction Test
d) Marcher's Test

8.If a person has Sciatica, what movement is most commonly painful for them?

a) Standing
b) Walking
c) Sitting
d) Running

9. If a patient has a disc bulge in their lumbar spine, is experiencing leg pain and is laterally leaning, what assessment/treatment is most beneficial to start with?

a) Prone on Pillows
b) Prone on bed progressing to prone on elbows
c) Standing lumbar extension
d) Lateral shift correction

10. Which Neuro exam test would rule in a Disc herniation if positive?

a) Well straight leg raise
b) Straight Leg Raise
c) LE Reflexes
d) Slump Test

PART B: SHORT ANSWER QUESTIONS (SAQ) **8 MARKS**

ANSWER ALL QUESTIONS.

Describe the stages of fracture healing

SECTION D SPORTS MEDICINE

PART A

1. Dynamic stretching is most similar to which of the following?
   A. Specific warm up
   B. General warm up
   C. Easy stretch
   D. Static stretch
2. Which type of flexibility is most essential for the athlete to prevent injury?
   A. Static flexibility
   B. Dynamic flexibility
   C. Both A and B
   D. None of the above

3. Following statements are true regarding isotonic exercises except:
    A. Joint is moved through a range of motion against the resistance of a fixed weight
    B. Delorme PRE program is a form of isotonic exercise
    C. Isotonic exercise consists of concentric and eccentric work
    D. Intensity or resistance is constant throughout the range of motion
4. A sports physiotherapist designs an exercise program for an athlete recovering from a lower extremity injury. A single most important factor in an exercise program designed to increase muscle strength is:
    A. The Recovery time between exercise sets
    B. The number of repetitions per set
    C. The duration of exercise session
    D. The Intensity of exercise
5. What type of falling technique has to be adapted by the player in order to prevent shoulder injuries?
    A. Fall on outstretched arm
    B. Fall on the point of the shoulder
    C. Roll on the shoulder
    D. All of the above
6. How can we identify the anterior dislocation of shoulder by physical examination?
    A. Arm is held with slight external rotation and abduction
    B. Arm is held in adduction and internal rotation
    C. Limited external rotation
    D. All of the above
7. What is the mechanism of injury of anterior labrum?
    A. Shoulder abduction, flexion and external rotation
    B. Shoulder abduction, flexion and internal rotation
    C. Shoulder abduction, extension and internal rotation
    D. Shoulder abduction, extension and external rotation
8. A patient diagnosed with right shoulder adhesive capsulitis is limited to 25 degrees of lateral rotation. Which mobilization technique would be indicated with this limitation?
    A. Lateral distraction and anterior glide
    B. Medial distraction and posterior glide
    C. Lateral distraction and posterior glide
    D. Medial distraction and inferior glide
9. What type of loading in the elbow leads to lateral tennis elbow?
    A. Eccentric
    B. Concentric
    C. Isometric
    D. All the above
10. Which ligament is the main stabilizer in order to prevent medial tension injuries?
    A. Transverse band of the ulnar collateral ligament
    B. Posterior band of the ulnar collateral ligament
    C. Anterior band of the ulnar collateral ligament

D. Fibres of lateral collateral ligament

11. Which is the commonest muscle among the quadriceps group prone for strain?
    A. Vastus medialis
    B. Vastus lateralis
    C. Rectus femoris
    D. Sartorius
12. Hamstring pull is the commonest injury among which group of sports players?
    A. Sprinters
    B. Tennis players
    C. Ballistic players
    D. Table tennis players
13. During a running completion an athlete hit his knee against a hard surface when he fell down. He presents with a six-week history of knee pain, a positive posterior drawer sign, and difficulty walking down inclines. What is the most important muscle group to strengthen?
    A. Knee flexors
    B. Knee extensors
    C. Hip flexors
    D. Hip extensors
14. Closed packed position for the hip joint is achieved in the following positions except
    A. Maximum extension
    B. Abduction
    C. External rotation
    D. Internal rotation
15. In young sports children, they have increased chances of shoulder dislocation
    A. Inferiorly and anteriorly
    B. Inferiorly and posteriorly
    C. Superiorly and anteriorly
    D. Superiorly and posteriorly

PART BSHORT ANSWER QUESTION

1. Discuss indications for exercise stress testing (8 Marks)