

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. If a magnetic resonance image (MRI) correctly identifies 95% of patients as positive for anterior cruciate ligament tears, then the MRI is:
 - a) Sensitive
 - b) Specific
 - c) Significant
 - d) Stable
2. A physiotherapist is examining a patient who is recovering from a motor vehicle accident that injured the left forearm. The patient appears to have damaged the posterior interosseous nerve. Which of the following motions will be **MOST** impaired?
 - a) Wrist radial deviation
 - b) Wrist ulnar deviation
 - c) Wrist extension
 - d) MCP extension
3. A patient receiving physiotherapy interventions for a recent shoulder injury demonstrates a 2+/5 manual muscle test for shoulder flexion. Which of the following **BEST** describes the amount of motion this patient can perform?
 - a) The patient is able to complete more than 1/2 of the available range of motion against gravity.
 - b) The patient is able to complete less than 1/2 of the available range of motion against gravity.
 - c) The patient is able to complete the available range of motion with gravity eliminated.
 - d) The patient is able to complete less than 1/2 of the available range of motion with gravity eliminated.
4. 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 the patient on activity modification.
5. A geriatric patient with “walking” pneumonia and a history of recent falls is receiving physiotherapy interventions for general strengthening. What part of this person’s treatment is affected **MOST** by his lung condition?
 - a) Decreased stamina/tolerance of activity
 - b) Inability to participate in endurance type activities
 - c) Diminished tidal volumes
 - d) Lower oxygen saturation with moderate activity

6. After sustaining a traumatic brain injury, a patient presents to physical therapy with symptoms consistent with damage to the amygdala, hippocampus, and thalamic nuclei. Which of the following symptoms will **MOST** likely be present in this individual?
 - a) Impaired fine motor skills, including ataxia
 - b) Disrupted vision, hearing, and sensation to the face/tongue
 - c) Hemiparesis, with the upper extremity more affected than the lower extremity
 - d) Lack of behavior control and memory difficulties

7. A physiotherapist is evaluating a patient with pain that radiates throughout his lower extremities. The patient has significant foot drop while ambulating and complains of numbness and tingling extending from the great toe up to the knee along the anterior leg. What is the **MOST** likely pathology underlying these symptoms?
 - a) Sciatic nerve entrapment
 - b) Deep peroneal nerve inflammation
 - c) Tibial nerve entrapment
 - d) L5 nerve root entrapment

8. When treating a geriatric patient with osteoporosis, which of the following will be **MOST** important to include in a treatment plan to improve bone density?
 - a) Treadmill with high incline
 - b) Lumbar flexion resistance training
 - c) Seated rowing machine
 - d) Leg press resistance training

9. Which of the following **BEST** describes the symptoms of anterior compartment syndrome of the lower leg?
 - a) Exercised-induced shin pain
 - b) Night pain associated with homoplastic osteoma
 - c) Acute anterior pain and paresthesia secondary to trauma
 - d) Exertional pain directly on the tibia secondary to stress fracture

10. While evaluating a patient with a suspected Morton's neuroma, which of the following differential diagnoses will be **MOST** important to rule out before continuing with treatment?
 - a) Calcaneal bone spur
 - b) Tarsal tunnel syndrome
 - c) Anterior talofibular ligament sprain
 - d) Achilles tendon paratenonitis

11. A patient is being evaluated after a knee injury, and the examiner chooses to use the Reverse Pivot-Shift Test? Which of the following structures is **BEST** tested with this special test?
 - a) Anterior Cruciate Ligament
 - b) Posterior Cruciate Ligament
 - c) Medial Collateral Ligament
 - d) Lateral Collateral Ligament

12. According to the American Red Cross, what is the appropriate ratio of chest compressions to rescue breaths for infants during single rescuer cardiopulmonary resuscitation (CPR)?
- 15 compressions: 2 breaths
 - 20 compressions: 2 breaths
 - 25 compressions: 2 breaths
 - 30 compressions: 2 breaths
13. Which one of the following cervical spine joints is primarily responsible for the flexion and extension of the cranium that occurs when a person is nodding “yes”?
- Atlanto-occipital joint
 - Atlanto-axial joint
 - C2-3 zygapophyseal joint
 - C3-4 zygapophyseal joint
14. In the daily SOAP note documentation of a physical therapy treatment session, which of the following categories will contain the patient’s complaints?
- Subjective
 - Objective
 - Assessment
 - Plan
15. A patient is having difficulty with heel cord tightness while walking. During ambulation, what is the normal range of motion for ankle plantar flexion?
- 0-5 degrees
 - 0-10 degrees
 - 0-15 degrees
 - 0-20 degrees
16. 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
17. When using the parallel bars for gait training, what is the appropriate adjustment of height that will optimize stability and security for the patient?
- A height that allows for elbow flexion of approximately 0 degrees.
 - A height that allows for elbow flexion of approximately 10 degrees.
 - A height that allows for elbow flexion of approximately 15 degrees.
 - A height that allows for elbow flexion of approximately 20 degrees.

18. A patient is being examined for elbow/wrist pain which has been worsening for the last few weeks. The patient reports that he is losing strength in his thumb and is unable to perform a “tip to tip pinch grip” with the involved hand. Which of the following conditions is **MOST** likely present?
- Anterior interosseous nerve syndrome
 - Carpal tunnel syndrome
 - De Quervain’s disease
 - Ulnar impaction syndrome
19. A patient is having difficulty achieving full knee extension after arthroscopic surgery. The patient appears to have difficulty with the “screw-home” mechanism. Which of the following **BEST** describes the action of the screw-home mechanism?
- The tibial plateau rotates medially during the final 10 degrees of extension.
 - The tibial plateau rotates medially during the final 20 degrees of extension.
 - The tibial plateau rotates laterally during the final 10 degrees of extension.
 - The tibial plateau rotates laterally during the final 20 degrees of extension.
20. A 79-year-old patient is receiving physical therapy for weakness and difficulty walking. Which of the following test results would **BEST** indicate that the patient is at a significant fall risk?
- Tinetti Performance Oriented Mobility Assessment Score = 24
 - Timed Up and Go test = 21 seconds
 - Berg Balance Scale = 45
 - 6 Minute Walk Test = 530 meters
21. A patient with type II diabetes is coming to the physical therapy clinic for treatment after a total knee replacement. Which of the following will be most important when treating this individual with therapeutic exercise?
- Include activities for large muscle groups to improve glucose absorption.
 - Encourage the patient to eat more than 1/2 hour before the therapy session.
 - Add appropriate exercises as tolerated, focusing on knee extension.
 - Instruct the individual to bring small snacks to eat throughout the session.
22. A patient with a body mass index of 34.9 is being treated for generalized weakness and difficulty walking. Which of the following will be **MOST** important when creating a therapeutic exercise routine for this patient?
- Use recumbent and low impact drills to minimize jarring forces.
 - Monitor heart rate and blood pressure throughout treatment.
 - Add both strength and endurance activities to promote weight loss.
 - Instruct the patient to maintain a Borg RPE less than 13 during endurance activities.
23. A physiotherapist is performing a treadmill exercise stress test using the Bruce protocol. During stage 3 of the test, the P wave increases in height and the S-T segment begins to become significantly upsloning. What is the **MOST** appropriate course of action?
- Stop the test and refer the patient to a physician.
 - Lower the stage back to stage 2 and monitor for improved electrocardiographic indicators.
 - Continue with the test without any modification, monitoring for symptoms of cardiac distress.
 - Discontinue the test, and monitor the patient’s vital signs for 10 minutes.

24. A patient is receiving cardiac rehab and has a heart rate of 110 during moderate intensity exercise. The patient reports a 16 on the Borg RPE scale. Which class of heart medications is **MOST** likely present?
- Beta Blockers
 - Angiotensin-Converting Enzyme (ACE) Inhibitors
 - Calcium Channel Blockers
 - Angiotensin II Receptor Blockers
25. A 12-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
26. 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?
- 1.0 MHz, 1.5 W/cm², 50% duty cycle
 - 3.0 MHz, 1.5 W/cm², 100% duty cycle
 - 1.0 MHz, 1.5 W/cm², 100% duty cycle
 - 3.0 MHz, 1.5 W/cm², 50% duty cycle
27. A physical therapist is treating a 12-month-old child who has been diagnosed with Down Syndrome. The parents report that the child still has not begun to stand or attempt to walk with help, but is able to sit upright without support. Which of the following will be the **BEST** initial treatment to help the child begin walking?
- Begin by working on dynamic sitting balance to encourage core control.
 - Initiate simple weight bearing activities, such as unsupported standing or catching a ball while standing.
 - Place the child prone over a small ball and encourage the patient to use her legs to turn toward the therapist.
 - Practice crawling activities up/down small steps to progress crawling stability in preparation for walking.
28. According to Maslow's Hierarchy of Needs, which of the following is the **UPPERMOST** level of self-actualization?
- Affiliative needs
 - Physiological needs
 - Esteem needs
 - Psychosocial needs
29. Which of the following is the **BEST** reason for pregnant women to avoid high intensity exercise?
- Decreased cardiac output
 - Decreased oxygen availability
 - Morphological changes to the abdominal muscles
 - Preferential blood flow to working muscles

30. A female patient is having difficulty with stress urinary incontinence and is seeking treatment from a physiotherapist. Which of the following treatment options will be **MOST** effective at decreasing the bouts of incontinence?
- Perineal strengthening exercises
 - Limit fluid intake to 300 ml. every 4 hours
 - Instruct the patient to avoid stressful situations
 - Gluteal strengthening exercises

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.

- Write a short note on above knee amputation - indications, pathomechanical factors of common deformities after the amputation, and physiotherapy management. **(1+2+2=5 marks)**
- Write a short note on ligament sprain - clinical features and management of different grades of ligament sprain, provide recent evidence of soft tissue management. **(5 marks)**
- Mention 5 cardiovascular responses and 5 respiratory responses to aerobic exercises. **(2.5+2.5=5 marks)**
- Explain biopsychosocial model of pain. **(5 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

A 57-year-old woman who had undergone exploratory laparotomy following a road traffic accident having sustained duodenal injury and multiple rib fractures on right side is admitted to the surgical ward. It is her postoperative day three and she has been bed ridden for those many days. On reviewing charts; a midline incision was given and subsequently the abdominal cavity was approached to repair the duodenum. Currently she is on therapeutic Enoxaparin for Deep Vein Thrombosis and thrombocytopenia was noted. She is also on the chest drain. Patient is unable to expectorate the sputum due to incisional pain and says she is feverish and develops shortness of breath without oxygen supply. On percussing the chest, it was inferred with dullness on the right basal lobe and reduced air entry on auscultation concomitantly. The patient is on antibiotics after finding an organism growth in sputum culture.

- List down the five most common postoperative complications of upper abdominal surgeries and briefly write down the physiotherapy management of these complications. **(10 marks)**
- What are the indications for chest drain in this type of case? **(2 marks)**
- What is ACBT? Elaborate it. **(5 marks)**

4. Write a brief note on tactile fremitus. **(3 marks)**
5. When using SOAP notes to assess a patient, what are the things you will be looking under observation while assessing this patient? **(3 marks)**
6. What is Traub's area? **(2 marks)**
7. Design a plan of care for this patient right from the postoperative day one. **(5 marks)**
8. As the patient is on anticoagulant, is it advisable to ambulate the patient, why and why not? **(2 marks)**
9. Enumerate a few precautions you are going to take while ambulating a patient with a chest drain on. **(2 marks)**
14. List down the inferences that can be drawn from a contralateral tracheal deviation. **(2 marks)**
15. Broadly classify antibiotics. **(4 marks)**
16. What are the non-pharmacological ways to manage DVT? **(3 marks)**
17. List down the necessary clinical features that are present in this patient to diagnose with pneumonia. **(2 marks)**
18. What is an ideal incision? And with the help of a diagram indicate different types of abdominal incisions. **(2+3 marks)**

CASE II

A 40-year-old female physician presents with low back pain, right sciatica, and the following history. During the last 3 of her 4 pregnancies, she experienced left sciatica that resolved with subsequent low back pain and subsequent mild and occasional low back discomfort. The latter did not restrict her activities until approximately 8 months ago when she experienced greater pain than usual, which required 9 days of bed rest until symptoms decreased. Several days ago she experienced a second bout of spontaneous back pain but, as she could not take off work, remained at her job. Pain was aggravated by bending, sitting in a soft chair, or while straining, and was relieved by recumbency, sitting in a firm, upright chair, and when walking. After several days the pain eased off although she suddenly developed severe pain radiating down from her low back to her left buttock, ischial tuberosity and down the posterior aspect of her left thigh and leg as well as lateral aspect of her foot. She believes this started when she bent down to pick up a heavy object. When asked, she amidst that the latter area feels numb and tingles at times. Now, sitting in any type of chair aggravates pain, as does sneezing or coughing, and walking, in addition to bending and lifting objects. Back symptoms are relieved considerably by recumbency in the supine posture with her left knee bent and supported by a pillow, although leg symptoms persisted.

Observation – a left trunk list is observed in the direction of the sciatica that is abolished when the patient lies down. There is significant flattening of the lumbar spine. No swelling noted.

Palpation – There is mild lumbosacral tenderness; no “step” is palpable. The paraspinal muscles feel “tight” and in spasm.

Range of motion – Although lateral bending and extension are unremarkable, forward flexion is markedly restricted and aggravates pain. The patient claims that before the recent symptoms she was able to touch her toes with ease.

Strength – She walks on tiptoe but is unable to maintain the equinus posture on the left due to weakness of gastrocnemius. She can walk on her heels and on the lateral but not medial borders of the left foot. Mild weakness in the left gluteus maximus and hamstrings musculature compared with the right. The left extensor hallucis is normal. There is a suggestion of mild resisted knee flexion on the left.

Flexibility – The prone bend test for psoas muscle extensibility shows diminished flexibility on the left side, indicated by a higher, more protruding left buttock. Positive Thomas tests bilaterally.

Pulses – These are intact.

Girth measurement – The left thigh and calf demonstrates a difference in girth of 1 and 1.5 cm, respectively, as compared with the right lower extremity.

Sensation – There is blunting to pinprick over the left heel and lateral border of the foot including the lateral two toes.

Deep tendon reflexes – Although both knee jerks are brisk and equal, both ankle jerks are present, although the left is diminished. Additionally, the distal medial and lateral hamstring reflexes are diminished on the left. Unsustained clonus of the left ankle noted. Plantar responses are downward.

Special tests – Although the right SLR is 70 degrees, the left is 45 degrees. When seen a few days later, her left SLR had improved to 65 degrees. Positive Lasegue on the left but not right. Positive bowstring sign and Brudzinski test on the left. Left heel drop test is weakly positive. Squatting is normal. Positive diurnal SLR and crossed-leg sign.

1. Read the above case carefully including the observations and tests performed, and make 2 inferences on the potential pathological cause of the patient’s symptoms. **(2 marks)**
2. Why does the patient complain of increased pain with sneezing, coughing, laughing or straining? **(1 mark)**
3. The patient has tenderness and paraspinal muscles spasms in the lower back. Mention some ways to help alleviate the pain and decrease the muscle spasms. **(2 marks)**
4. The patient is not able to walk on the medial borders of her left foot, why? **(1 mark)**
5. The examiner had found her distal pulses to be intact. Name two distal arteries where you can check the pulses. Why is it important to check the pulses in this patient? **(2 marks)**
6. Describe how the Thomas test is performed. This patient has bilateral Thomas test positive, provide a brief comment on it. **(2+1=3 marks)**
7. The patient has a diminished ankle jerk on the left, what could be the reason? **(1 mark)**
8. This patient has a positive Bowstring and Brudzinski’s sign. Describe how to perform these two tests. What does the positive sign indicate? **(2+2=4 marks)**

9. The examiner measured a decreased girth circumference of the calf and thigh in the left as compared to her right leg. What do you infer? **(2 marks)**
10. What are the progressive stages of disc prolapse? **(3 marks)**
11. What is the difference between radicular symptoms and radiculopathy? Relate the radicular symptoms and radiculopathy with this patient. **(1+2=3 marks)**
12. SLR for this patient is 70 degrees on the right and 45 degrees on the left for this patient. Provide your inference. **(2 marks)**
13. Explain how you will administer the crossed SLR test on this patient. This patient has positive crossed leg sign. Explain the pathophysiology of positive crossed leg sign. **(1+2=3 marks)**
14. This patient also has a positive diurnal positive SLR sign. What does this mean? **(3 marks)**
15. This patient has a trunk list/shift towards her left, the painful side that is abolished when the patient lies down. Briefly explain the pathophysiology of list. **(2 marks)**
16. What is the most likely level of disc prolapse in this patient? Identify the traversing nerve root and exiting nerve root at this level. **(1+1+1=3 marks)**
17. How can you differentiate between nerve root impingement deriving from spinal stenosis and disc pathology? **(2 marks)**
18. How will you test if the patient is malingering? **(2 marks)**
19. Mention five differential diagnosis of low back pain. **(5x0.4=2marks)**
20. Mention a single surgical indication related to disc pathology. **(1 mark)**
21. Provide your management plan for this patient. **(6 marks)**

TASHI DELEK