



ENTRANCE EXAMINATION : ACADEMIC SESSION JANUARY 2019

PROGRAMME: ADVANCED CERTIFICATE PROGRAM IN PHYSIOTHERAPY

Time: 90 minutes

Max.Marks: 100

(Select the most appropriate answer)
(There are no negative marks for wrong answers)

1. A patient with a stroke affecting the right middle cerebral artery has difficulty walking, especially over uneven surfaces. Which of the following describes the MOST appropriate initial treatment to improve the patient's ability to walk over uneven surfaces?

- a) Place a tripod in the patient's left hand and train him to use a step-to gait pattern.
- b) Place a tripod in the patient's right hand and train him to use a step-to gait pattern.
- c) Fit the patient with a 4-wheeled walker and instruct him to use a 4-point gait pattern.
- d) Fit the patient with axillary crutches and instruct him to use a 4-point gait pattern.

2. A 79 year old female presents to outpatient rehabilitation services 6 weeks following a CVA with right hemiplegia. She complains of right shoulder pain working on functional upper extremity movements and has severe shoulder pain when practicing bed mobility activities such as rolling and scooting. On examination, it is observed that the humeral head is inferiorly displaced. Which of the following would be the MOST appropriate for her condition?

- a) Transcutaneous Electrical Nerve Stimulation (TENS)
- b) Functional Electrical Stimulation (FES)
- c) Short Wave Diathermy (SWD)
- d) Interferential Current (IFC) Stimulation

3. A physical therapist evaluating a 66 year old female who has a history of severe head trauma following a motor vehicle accident. The patient has difficulty with rapid alternating movements while performing neurologic testing. The BEST term to describe this specific impairment is:

- a) Ataxia
- b) Dysmetria
- c) Dysarthria
- d) Dysdiadokokinesia

4. A 30 year old male presents to outpatient rehabilitation with numbness and tingling on the 4th and 5th fingers of the left hand consistent with nerve entrapment symptoms. Upon further examination, it is noted that the patient has normal sensation on the dorsum of the hand on the ulnar side. Where is the MOST likely source of nerve entrapment?

- a) Guyon's Canal
- b) Carpal Tunnel
- c) Cubital Tunnel
- d) 1st Rib

5. The connective tissue forming outer layer of bone is known as?

- a) Endostium
- b) Periostium
- c) Osteon
- d) Compact bone

6. Degenerative bone disease is called as?

- a) Osteoarthritis
- b) Rheumatoid Arthritis
- c) Gouty arthritis
- d) Synovitis

7. Poliomyelitis is caused by viral infection in

- a) Posterior horn cell
- b) Anterior horn cell
- c) Muscle
- d) Peripheral Nerves

8. Damage to the ulnar nerve at the medial epicondyle would give loss of

- a) Abduction of the thumb
- b) Cutaneous sensation on the lateral side of the hand
- c) Abduction of the fingers
- d) Flexion of the second proximal interphalangeal joint

9. Functional Electrical Stimulation (FES) is useful in the following EXCEPT

- a) Cauda equina Syndrome for foot dorsiflexion
- b) Hemiplegia for shoulder abduction
- c) Hemiplegia for gait training
- d) Wrist extension and finger release in spastic hand

10. Which of the following muscle of larynx is the abductor of vocalcord?

- a) Lateral cricoarytenoid
- b) Posterior cricoarytenoid
- c) Cricothyroid
- d) Aryepiglotticus

11. The ability to rapidly and smoothly initiate, stop, or modify movements while maintaining postural control is known as
- a) Agility
 - b) Dexterity
 - c) Adaptation
 - d) Ataxia
12. Peripheral feedback during the motor response is provided by
- a) Muscle spindles
 - b) Golgi tendon organs
 - c) Joint and cutaneous receptors
 - d) All the above
13. Spinal extension exercises are seldom recommended for
- a) Chronic IVDP
 - b) Degenerative disc disease
 - c) Spondylolisthesis
 - d) Underwent discectomy in the recent past
14. Which of the following is NOT true about Complex regional pain syndrome?
- a) It is also known as shoulder-hand syndrome or reflex sympathetic dystrophy
 - b) Repeated intra-articular steroid injections are recommended
 - c) Stage 1 is highly reversible
 - d) Stage 3 is mostly irreversible
15. Measures to prevent contracture is/are
- a) Passive range of motion exercises
 - b) Active range of motion exercises
 - c) Proper positioning
 - d) All of the above
16. Therapeutic intervention that focuses on moving the less impaired limb while watching its mirror reflection is known as?
- a) Mental imagery
 - b) Virtual reality
 - c) Mirror therapy
 - d) Constraint induced therapy
17. The following are the measures to decrease spasticity
- a) Hydrotherapy
 - b) Stretching exercises
 - c) Botulinum toxin injections
 - d) All the above

18. 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

19. Tennis elbow is

- a) Medial epicondylitis
- b) Lateral epicondylitis
- c) Bicipital tendonitis
- d) Olecranon bursitis

20. Foot drop is due to paralysis of

- a) Tibial Nerve
- b) Common Peroneal nerve
- c) Sciatic Nerve
- d) Sural Nerve

21. In Erb's palsy loss of the C5, C6 roots leads to a malfunction of these muscles except

- a) Infraspinatus
- b) Deltoid
- c) Biceps brachii
- d) Pronator teres

22. The oxygen uptake corresponding to one MET is

- a) 3.5 ml/kg/min
- b) 3 ml/kg/min
- c) 4.5 ml/kg/min
- d) 5 ml/kg/min

23. Posterior superior iliac spine corresponds to which vertebrae?

- a) Second Lumbar
- b) Fourth Lumbar
- c) Second Sacral
- d) Fourth Sacral

24. Ischial containment prosthesis is used for

- a) Above knee amputation
- b) Above elbow amputation
- c) Below knee amputation
- d) Symes amputation

25. Child attains milestone of sit without support by

- a) 3 months
- b) 4 months
- c) 1 years
- d) 6 months

26. Normal range of motion of shoulder abduction is

- a) 180 degree
- b) 90 degree
- c) 160 degree
- d) 270 degree

27. A 22 year old female presents to the clinic with a chief complaint of knee pain following a twisting injury while playing soccer 5 days ago. The patient's knee is swollen significantly and is unable to jump or run. What special test would be the MOST appropriate to diagnose the injury?

- a) Lachman's test
- b) Posterior drawer test
- c) Murphys test
- d) External Rotation Recurvatum Test

28. Training in parallel bar with long mirrors will NOT help in ?

- a) Gait training
- b) Posture correction
- c) Upper limb functions including control of incoordination
- d) Sensory integration

29. Which of the following is TRUE about ultrasound waves

- a) Greater the impedance difference at a boundary, the greater the reflection will occur
- b) Greater the impedance difference at a boundary, the lesser the reflection will occur
- c) Lesser the impedance difference at a boundary, the greater the reflection will occur
- d) None of the above

30. Pure blood to the lungs are supplied by
- Pulmonary artery
 - Bronchial artery
 - Pulmonary vein
 - Intercostal arteries
31. Management of adhesive capsulitis include
- Intra-articular steroids
 - Physical therapy
 - Manipulation under general anaesthesia
 - All the above
- 32) Gate control theory of pain was introduced by
- Melzack and Wall
 - Magendie and Muller
 - Shiffs and Brown Sequard
 - Edinger and Gower
- 33) Tissue repair phases according to chronological order is
- Bleeding, Proliferation, Inflammation and Remodeling
 - Bleeding, Inflammation, Proliferation and Remodeling
 - Bleeding, , Inflammation, Remodeling and Proliferation
 - Remodeling, Proliferation, Inflammation and Bleeding
34. A patient complains of weakness in the right hip while she is ambulating. Upon examination, you notice that the patient has a significant drop of the left hip while in midstance on the right leg. The MOST appropriate treatment for this impairment would be:
- Strengthening hip abduction of the left leg.
 - Strengthening hip abduction of the right leg.
 - Standing flexion of the left leg.
 - Standing flexion of the right leg.
- 35) Iliotibial tract is
- Thickened band of fascia lata
 - Aponeurosis of vastuslateralis
 - Extends from iliac crest to medial tibial condyle
 - Gives insertion to gluteus medius
36. Bell's palsy is due to paralysis of
- Optic nerve
 - Oculomotor nerve
 - Facial nerve
 - Trigeminal nerve

37. Gait cycle begins with

- a) Midstance
- b) Toe off
- c) Heel strike
- d) Initial swing

38. Lateral curvature of the spine is known as

- a) Kyphosis
- b) Lordosis
- c) Ankylosis
- d) Scoliosis

39. Frenkel's exercise are done to improve function in

- a) Cerebellar dysfunction
- b) Amputations
- c) Spinal cord injury
- d) Muscular dystrophy

40. Degenerative joint disease is called

- a) Rheumatoid arthritis
- b) Septic arthritis
- c) Osteoarthritis
- d) Tuberculous arthritis

41. Common flexor origin of forearm muscles is

- a) Medial epicondyle
- b) Lateral epicondyle
- c) Olecranon
- d) Shaft of ulna

42) Which is the least important activity within 5 days of cardiac surgery?

- a) Deep breathing exercises
- b) Incentive spirometry
- c) Resistive exercises for upper limb
- d) ROM exercises for upper limb

43. Exercises in which contraction of muscle occur without change in muscle length is known as

- a) Isotonic exercise
- b) Isometric exercise
- c) Isokinetic exercise
- d) Eccentric exercise

44. Which of the following is true about cane height measurement?

- a) Cane is placed approximately 6 inch from the lateral border of the toes
- b) Top of the cane should be at the level of the greater trochanter
- c) Elbow should be flexed to about 20 to 30 degrees
- d) All the above

45. Fluidotherapy, whereby warm air is circulated through a bed of fine-grained cellulose particles is an example of

- a) Conduction
- b) Convection
- c) Radiation
- d) Conversion

46. Hunting response is associated with

- a) Hydrotherapy
- b) Fluidotherapy
- c) Barotherapy
- d) Cryotherapy

47. In paraffin bath the temperatures in degree Celsius are maintained at

- a) 47 - 54
- a) 71 - 79
- b) 61 - 69
- c) 36 - 45

48. Superficial Peroneal Nerve supplies

- a) Tibialis Anterior
- b) Peroneus longus
- c) Peroneus tertius
- d) Extensor halluc longus

49. A patient presents to the clinic with right shoulder pain and complains of difficulty reaching overhead, with pain especially from 60-120 degrees of shoulder flexion. Which special test would be MOST informative for this set of symptoms?

- a) Neer Test
- b) Empty Can Test
- c) Crossover Test
- d) Push Off Test

50. Glenoid cavity articulates with

- a) Head of femur
- b) Head of radius
- c) Head of ulna
- d) Head of humerus

51. What percentage of gait cycle is stance phase?

- a) 40
- b) 50
- c) 60
- d) 80

52. A patient has right leg pain and displays redness and swelling throughout the foot and ankle distal to the knee that has developed over the last 3 days. The patient reports no trauma and complains of a deep ache in the calf musculature. What is the MOST appropriate initial treatment?

- a) Refer to physician to further examination.
- b) Elevate the lower extremity and apply an ice modality.
- c) Instruct the patient on range of motion exercises and begin a home exercise program.
- d) Perform instrument assisted manual soft tissue mobilization to decrease the swelling.

53. Modified Rankin Scale is used in Stroke

- a) To track muscle weakness
- b) To plan intensive care
- c) To assess disability
- d) To predict who the bed-ridden patient will be

54. A physical therapist is evaluating a 50 year old patient with a generally swollen right leg. The patient does not report any trauma to the leg and describes the swelling as increasing gradually over the last 12 months. The swelling is non-pitting, primarily below the knee. The leg is not red or hot, and the patient indicates that his leg just feels "heavy." What is the MOST likely origin of the swelling?

- a) Systemic infection
- b) Chronic inflammation
- c) Congestive heart failure
- d) Lymphedema

55) Which of the following is NOT a rotator cuff muscle

- a) Supraspinatus
- b) Subclavius
- c) Infraspinatus
- d) Teres Minor

- 56) Which of the following is TRUE about TENS?
- High frequency TENS activates opioid systems
 - Low frequency TENS activates pain gate mechanism
 - Burst mode TENS activates both opioid and pain gate mechanism
 - None of the above
57. The following are included in cryotherapy EXCEPT
- Ice massage
 - Hydrocollator packs
 - Whirlpool baths
 - Cold packs
58. The use of ultrasound to deliver drugs transcutaneously is known as
- Phonophoresis
 - Iontophoresis
 - Cavitation
 - Acoustic emission
59. Which nerve lesion leads to Ape thumb deformity ?
- Ulnar Nerve
 - Median Nerve
 - Radial Nerve
 - Axillary nerve
60. Which ligament maintains antero-posterior stability of the knee?
- Collateral ligaments
 - Popliteal ligaments
 - Cruciate ligaments
 - Ligamentum patellae
61. Injury to C8-T1 nerve root in brachial plexuses causes
- Klumpke's palsy
 - Erb's palsy
 - Axillary nerve palsy
 - Radial nerve palsy
62. The following are the effects of exercise in cardiac patients EXCEPT
- Improves collateral circulation
 - Causes arteriolar vasoconstriction
 - Increases stroke volume
 - Maximum cardiac output increases
63. The duty factor of an ultrasound unit which is programmed to have equal "on" and "off" periods is (in percentage) is
- 100
 - 75
 - 50
 - 25

64. The number of bronchopulmonary segments in right lung ?
- 10
 - 08
 - 09
 - 11
65. In exercise training heart rate reserve means?
- $220 - \text{Age}$
 - 75 % of HR max
 - $\text{HR}_{\text{max}} - \text{HR}_{\text{rest}}$
 - $\text{HR}_{\text{max}} + 30\% \text{ of HR}_{\text{rest}}$
66. Palmar interossei are responsible for
- Adduction
 - Abduction
 - Opposition
 - Extension
67. Interferential Therapy utilizes
- Two high frequency currents
 - Two medium frequency currents
 - Two low frequency currents
 - Four high frequency currents
68. The main extensor muscle of hip joint is
- Gluteus maximus
 - Gluteus minimus
 - Gluteus medius
 - Rectus femoris
69. The maximum amount of air expelled forcefully after a maximal inspiration is called
- Tidal volume
 - Vital capacity
 - Total lung capacity
 - Functional residual volume
70. A 32 year old female presents to the clinic complaining of left shoulder pain. The patient's symptoms include pain with reaching and limited motion in all planes. The patient's symptoms have been progressively worsening over the last month. What would be the MOST effective initial treatment?
- Refer the patient to their primary care provider for intracapsular corticosteroid injections.
 - Begin gentle progressive stretching exercises with the focus on increased active range of motion.
 - Initiate rotator cuff strengthening exercises, focusing on external rotation.
 - Instruct the patient on Codman pendulum exercises and apply a moist heat pack.

71. Which of the following is NOT a normal occurrence with increasing age?
- a) Vital capacity of the lung decreases
 - b) Residual volume increases
 - c) Functional residual capacity increases
 - d) Inspiratory capacity increases
72. At what body mass index (BMI) is one considered to be obese?
- a) 19 kg/m²
 - b) 25 kg/m²
 - c) 30 kg/m²
 - d) 35 kg/m²
73. Exercise has shown to increase:
- a) HDL
 - b) LDL
 - c) VLDL
 - d) None
74. Which of the following is NOT true about proprioception?
- a) Intrafusal spindle is a proprioceptive organ
 - b) Knee and ankle ligament injuries reduce proprioception
 - c) Diabetic neuropathy can cause loss of proprioception
 - d) Proprioception increases in elderly
75. Which of the following is/are ambulation aids?
- a) Walker
 - b) Parapodium
 - c) Lofstrand forearm orthosis
 - d) All the above
76. Which of the following is head cervicothoracic orthosis?
- a) Halo orthosis
 - b) SOMI
 - c) Philadelphia orthosis
 - d) Miami orthosis
77. A patient who suffered a fall on her outstretched right hand 2 days ago and now has right wrist pain with anatomical snuffbox tenderness likely has
- a) Boxer fracture
 - b) Nightstick fracture
 - c) Galeazzi fracture
 - d) Scaphoid fracture
78. Which of the following does NOT happen during inspiration?
- a) The ribs move upward
 - b) The diaphragm lifts up
 - c) The antero-posterior dimensions of the chest are increased
 - d) The transverse dimensions of the thorax are increased

79. The most important care to be given in bed ridden patient is?

- a) Assessment of contracture
- b) Passive exercises and frequent position change in bed
- c) Incentive Spirometry
- d) Standing balance

80. Hoisting helps in rehabilitation because?

- a) Once body weight is removed balancing is easy
- b) Helps to transfer the patients
- c) Patient can walk with ease
- d) It's easy to do ROM exercises

81. Volume of air breathed in and out in a normal respiration is called

- a) Tidal volume
- b) Vital capacity
- c) Total lung volume
- d) Functional residual capacity

82. Laser canes can be useful in

- a) Hemiplegic gait
- b) Freezing of gait
- c) Ataxic gait
- d) None of the above

83. Which of the following is NOT true concerning respiratory distress syndrome in premature infants?

- a) Their ability to synthesize DPPC is limited
- b) Higher pressures are required to ventilate the lungs
- c) Lung compliance is low
- d) Alveoli tend to over expand and sometimes burst at the end of inspiration

84. If the patient can complete range of motion against gravity; then the muscle power according to MRC grading is?

- a) Grade 5
- b) Grade 4
- c) Grade 3
- d) Grade 2

85. Conversion of electromagnetic energy to thermal energy is seen in

- a) Ultrasound therapy
- b) Short wave diathermy
- c) Contrast bath
- d) Paraffin bath

86. Exercising in heat chamber may induce all EXCEPT

- a) Fainting due to decreased total peripheral resistance
- b) Heat stroke when core temperature rises above 40 degree Celsius
- c) A rise in alveolar PCO₂
- d) Heat adaptation if performed daily for several weeks

87. Symptoms of Frailty syndrome include all EXCEPT

- a) Weight loss
- b) Exhaustion
- c) Low physical activity
- d) Fast walking speed

88. 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.

89. Which of the following is NOT a function of dead space?

- a) Cools inspired air to body temperature
- b) Saturates inspired air with water vapor
- c) Removes bacteria and other particulate matter
- d) Conducts the warmed air to the respiratory membranes

90. A muscle that flexes hip and knee joint

- a) Rectus femoris
- b) Semitendinosus
- c) Sartorius
- d) Biceps femoris

91. A physical therapist 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

92. Which of the following is NOT true about Fibromyalgia diagnosis?
- a) Fibromyalgia is a diagnosis of exclusion
 - b) Symptoms should be present at a similar level for less than 3 months
 - c) The WPI score is greater than or equal to 7
 - d) The SS score is greater than or equal to 5
93. Failure of the heart rate to increase with increasing workloads is known as
- a) Chronotropic incompetence
 - b) Ionotropic incompetence
 - c) Cardiac failure
 - d) Valvular incompetence
94. The benefits of aerobic training are all EXCEPT
- a) Decreases the myocardial oxygen demand for given load
 - b) Decreases peripheral resistance
 - c) Increases stroke volume
 - d) Increases the maximum heart rate
95. All are true about heart failure EXCEPT
- a) Decreased Cardiac output
 - b) Low stroke volume
 - c) Reduced Resting heart rate
 - d) Reduced maximum aerobic capacity
96. Following are seen in post cardiac transplantation EXCEPT
- a) Transplanted hearts are denervated
 - b) Resting tachycardia may be present
 - c) Chronotropic response to exercise is in response to circulating catecholamines
 - d) Augmented heart rate response to exercise
97. Which of the following is NOT a form by which CO₂ can be transported in the blood?
- a) As bicarbonate
 - b) Dissolved in the blood
 - c) Bound to the amino end groups in proteins
 - d) Bound to the imidazole ring of glutamate
98. The increase in blood flow to an exercising muscle is related to a rise in all EXCEPT
- a) Local PCO₂
 - b) Local H⁺ concentration
 - c) Arterial Pressure
 - d) Local muscle temperature

99. Which of the following is an exercise for knee?

- a) Straight leg rise
- b) Crunch
- c) Pelvic tilt
- d) Biceps curl

100. A patient who has suffered a vertebro-basilar CVA presents to the inpatient rehabilitation unit and has difficulty adducting and depressing his eyes. Which cranial nerve is the MOST likely cause of this impairment?

- a) CN I
- b) CN II
- c) CN III
- d) CN IV