



ENTRANCE EXAMINATION :

ACADEMIC SESSION JANUARY 2020

PROGRAM: 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. Which of the following patient complaints should have the highest priority for medical intervention?
 - a) A home therapy patient reports, "I am starting to have breakdown of my heels."
 - b) A patient who had an upper extremity cast yesterday reports, "I can't feel my fingers in my right hand today."
 - c) A young female report I think "I sprained my ankle about 2 weeks ago."
 - d) A middle-aged patient reports, "My knee is still hurting from the TKR."
2. 22 year old male athlete 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?
 - a) Legg-Calvé-Perthes' disease
 - b) Chondromalacia patellae
 - c) Osgood-Schlatter disease
 - d) Pes anserine bursitis
3. The difficulty with rapid alternating movements while performing neurologic testing is describe as
 - a) Ataxia
 - b) Dysmetria
 - c) Dysarthria
 - d) Dysdiadocokinesia
4. 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?
 - a) Beta Blockers
 - b) Angiotensin-Converting Enzyme (ACE) Inhibitors
 - c) Calcium Channel Blockers
 - d) Angiotensin II Receptor Blockers
5. In a person with a transfemoral amputation, an abnormal prosthetic gait with lateral trunk bending toward the involved side in midstance most commonly occurs with hip
 - a) adductor weakness
 - b) extension contracture
 - c) flexion contracture
 - d) abductor weakness
6. Degenerative bone disease is called as?
 - a) Osteoarthritis
 - b) Rheumatoid Arthritis
 - c) Gouty arthritis
 - d) Synovitis

7. While treating a patient for cardiac rehab, a physical therapist relies on the Borg RPE scale. The Borg rating of perceived exertion scale (RPE) is MOST representative of which type of data scale?
- Nominal
 - Ordinal
 - Cardinal
 - Marginal
8. Damage to the ulnar nerve at the medial epicondyle would give loss of
- Abduction of the thumb
 - Cutaneous sensation on the lateral side of the hand
 - Abduction of the fingers
 - Flexion of the second proximal interphalangeal joint
9. Golfer's elbow is
- Medial epicondylitis
 - Lateral epicondylitis
 - Bicipital tendonitis
 - Olecranon bursitis
10. What is the most frequent cause of stroke?
- Intracranial hemorrhage
 - Large vessel thrombosis
 - Cerebral embolism
 - Vasculitis
11. During prolonged (90 or more minutes) exercise, the preferred energy source for skeletal muscle is:
- Plasma glucose
 - Plasma fatty acids
 - Muscle triglycerides
 - Muscle glycogen
12. The order of motor unit recruitment during a skeletal muscle contraction of increasing force is:
- Type IIb → Type IIa → Type I
 - Type IIa → Type IIb → Type I
 - Type I → Type IIb → Type II
 - Type I → Type IIa → Type IIb
13. The ability to rapidly and smoothly initiate, stops, or modify movements while maintaining postural control is known as
- Agility
 - Dexterity
 - Adaptation
 - Ataxia
14. All of the following are true EXCEPT: Asthma can interfere with exercise by
- Increasing the work of breathing
 - Cold-induced bronchial muscle spasm
 - Limiting alveolar ventilation
 - Reducing the oxygen carrying capacity of the blood

15. A 43-year-old runner presents with right-sided hip pain. On examination, you note tenderness to palpation over the greater trochanter on the affected side. No focal neurologic deficits are noted and no other areas of tenderness are elicited. A key part of your treatment plan should include strengthening of the hip.
- internal rotators
 - extensors
 - abductors
 - adductors
16. Therapeutic intervention that focuses on moving the less impaired limb while watching its mirror reflection is known as?
- Mental imagery
 - Virtual reality
 - Mirror therapy
 - Constraint induced therapy
17. A patient reports pain around the anterior aspect of the calcaneus extending toward the 2nd metatarsal head. The patient has the most pain when first standing up after waking which gradually lessens throughout the day. The patient has recently begun a walking program. Which of the following disorders is MOST likely present?
- Medial deviation of the 1st metatarsal
 - Metatarsalgia
 - Tarsal tunnel syndrome
 - Plantar fasciitis
18. A person left CVA and right lower extremity hemiparesis uses a quad cane. He should be instructed to
- Place the cane in the patient's left upper extremity, encourage cane, then right lower extremity, then left upper extremity gait sequence.
 - Place the cane in the patient's left upper extremity, encourage cane, then left lower extremity, then right upper extremity gait sequence
 - Place the cane in the patient's right upper extremity, encourage cane, then right lower extremity, then left upper extremity gait sequence.
 - Place the cane in the patient's right upper extremity, encourage cane, then left lower extremity, then right upper extremity gait sequence.
19. Functional Electrical Stimulation (FES) is useful in the following EXCEPT
- Caudaequina Syndrome for foot dorsiflexion
 - Hemiplegia for shoulder abduction
 - Hemiplegia for gait training
 - Wrist extension and finger release in spastic hand
20. Which risk factor is most clearly implicated in the development of degenerative lumbar diskogenic disease?
- Hyperlordosis
 - Smoking
 - Body build
 - Posture
21. Ischial containment prosthesis is used for
- Above knee amputation
 - Above elbow amputation
 - Below knee amputation
 - Symes amputation

22. The oxygen uptake corresponding to one MET is
- 3.5 ml/kg/min
 - 3 ml/kg/min
 - 4.5 ml/kg/min
 - 5 ml/kg/min
23. A patient presents with rheumatoid arthritis and finger pain. The 2nd digit has a flexed metacarpophalangeal joint, hyperextended proximal interphalangeal joint, and a flexed distal interphalangeal joint. Which of the following is the MOST accurate description of the position?
- Swan neck deformity
 - Boutonniere deformity
 - Mallet finger deformity
 - De Quervain syndrome
24. Seronegative inflammatory arthritis conditions have a primary effect on
- Axial skeleton
 - Lumbar spine
 - Big joints of the body
 - Smaller joints of the body
25. Stiff knee gait is characterized by ____.
- Lurching
 - Hand to knee
 - Hip hiking
 - Steppage gait
26. The advantages of group therapy _____
- Time saving for therapist
 - Builds up confidence in patients
 - Maximizes patient's effort and develop competition among the patients
 - All the above
27. Serum uric acid level is higher in
- SLE
 - Stills disease
 - Gout
 - None of the above
28. A patient has just undergone a total hip replacement via a posterior surgical approach. Which of the following combinations of movements of the hip are MOST important to avoid?
- Extension, medial rotation, and abduction.
 - Extension, external rotation, and adduction.
 - Flexion, medial rotation, and adduction.
 - Flexion, external rotation, and abduction
29. Normal range of motion of shoulder abduction is
- 180 degree
 - 90 degree
 - 160 degree
 - 270 degree

30. Which equipment modification is suitable for a tennis player with lateral epicondylitis?
- Larger racquet head
 - Larger handle diameter
 - Increased string tension
 - Stiffer racquet
31. A physical therapist teaching a patient with COPD pulmonary exercises should do which of the following?
- Teach purse-lip breathing techniques.
 - Encourage repetitive heavy lifting exercises that will increase strength.
 - Limit exercises based on respiratory acidosis.
 - Take breaks every 10-20 minutes with exercises.
32. Which cardio respiratory outcome would you expect from an elderly person participating in an aerobic program?
- A decrease in VO₂max but an increase in walking speed
 - No change in tolerance during activities of daily living
 - Improvement in VO₂max
 - No change in stroke volume and a reduction in systemic vascular resistance
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. Which of the following is not a sign of increased intracranial pressure?
- Bradycardia
 - Increased pupil size bilaterally
 - Change in LOC
 - Vomiting
35. Which fibers transmit poorly localized, dull, visceral pain to the spinal cord?
- Myelinated A-alpha
 - Myelinated A-delta
 - Unmyelinated gamma
 - Unmyelinated C
36. Double support phase present at the _____ phase of gait cycle.
- Beginning of stance
 - End of stance
 - Beginning and end of stance
 - Mid stance
37. The component motion for ankle dorsiflexion is _____
- anterior glide of talus on the mortise
 - posterior gliding of talus in the mortise
 - compression of inferior tibiofibular joint
 - inversion of talus

38. Gait cycle begins with
- Midstance
 - Toe off
 - Heel strike
 - Initial swing
39. Frenkel's exercise are done to improve function in
- Cerebellar dysfunction
 - Amputations
 - Spinal cord injury
 - Muscular dystrophy
40. Force production by a skeletal muscle can be increased by
- Recruiting more motor units
 - Increasing the frequency of stimulation of a motor unit by the α -motor neuron
 - Setting the muscle at its optimal length
 - All of the above
41. A patient who has suffered a cutting injury to the entire left half of the spinal cord at the T8 level is being examined by a physical therapist. Which of the following impairments would be MOST apparent on the ipsilateral lower extremity?
- Loss of pain and temperature sensation
 - Loss of movement and light touch sensation
 - Loss of peripheral smooth muscle control
 - Loss of coordination and accuracy.
42. Lateral curvature of the spine is known as
- Kyphosis
 - Lordosis
 - Ankylosis
 - Scoliosis
43. Exercises in which contraction of muscle occur without change in muscle length is known as
- Isotonic exercise
 - Isometric exercise
 - Isokinetic exercise
 - Excentric exercise
44. Autonomic dysreflexia is triggered by
- intermittent catheterization
 - pregnancy
 - Appendicitis
 - All the above
45. Fluidotherapy, whereby warm air is circulated through a bed of fine-grained cellulose particles is an example of
- Conduction
 - Convection
 - Radiation
 - Conversion

46. The neurotransmitter released at the neuromuscular junction of a motor unit is always:
- Norepinephrine
 - Epinephrine
 - Acetylcholine
 - cyclic AMP
47. In paraffin bath the temperatures in degree Celsius are maintained at
- 47 – 54
 - 71 - 79
 - 61 - 69
 - 36 – 45
48. Haemarthrosis develops within _____ of injury and is very painful
- minutes to hours
 - hours to days
 - days to weeks
 - weeks to months
49. Superficial Peroneal Nerve supplies
- Tibialis Anterior
 - Peroneus longus
 - Peroneus tertius
 - Extensor halluc longus
50. The cardiac conduction system conducts the electrical impulse that causes heart muscle contraction in the following sequence:
- SA node → AV bundle → bundle branches → AV Node → purkinjefibres
 - SA node → AV bundle → AV node → bundle branches → purkinjefibres
 - SA node → AV node → AV bundle → bundle branches → purkinjefibres
 - SA node → bundle branches → AV node → AV bundle → purkinjefibre
51. What percentage of gait cycle is stance phase?
- 40
 - 50
 - 60
 - 80
52. Normal human locomotion requires _____ knee flexion
- 30 degrees
 - 60 degrees
 - 95 degrees
 - 105 degrees
53. Modified Rankin Scale is used in Stroke for ?
- To track muscle weakness
 - To plan intensive care
 - To assess disability
 - To predict who the bed-ridden patient will be
54. A Gouty Arthritis usually involves first
- Ankle
 - Great Toe
 - Thumb
 - Shoulder

55. Cardiac output refers to
- the volume of blood pumped by each ventricle per minute
 - the proportion of blood pumped out of each ventricle during systole
 - the product of the ejection fraction and heart rate
 - the electrical output of the cardiac conduction system during a single cardiac cycle
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 volume of air moving in and out of the lungs during a typical breath is known as the:
- vital capacity
 - tidal volume
 - functional residual capacity
 - residual volume
58. The use of ultrasound to deliver drugs transcutaneously is known as
- Phonophoresis
 - Iontophoresis
 - Cavitation
 - Acoustic emission
59. The articulating surface of patella consists of _____ facets
- One
 - Two
 - Three
 - Four
60. Which ligament maintains antero-posterior stability to the knee?
- Collateral ligaments
 - Popliteal ligaments
 - Cruciate ligaments
 - Ligamentum patellae
61. Trigger finger is due to
- Tenosynovitis
 - Synovitis
 - Bursitis
 - Fibrositis
62. Injury to C8-T1 nerve root in brachial plexuses causes
- Klumpke's palsy
 - Erb's palsy
 - Axillary nerve palsy
 - Radial nerve palsy
63. Which organelle is the site of ATP production?
- Nucleus
 - Endoplasmic reticulum
 - Mitochondria
 - Golgi apparatus

64. The duty factor of an ultrasound unit which is programmed to have equaled "on" and "off" periods is (in percentage) is
- 100
 - 75
 - 50
 - 25
65. What type of cells secrete insulin?
- alpha cells
 - beta cells
 - CD4 cells
 - helper cells
66. In exercise training heart rate reserve means?
- $220 - \text{Age}$
 - 75 % of HR max
 - $\text{HRmax} - \text{HR rest}$
 - $\text{HRmax} + 30\% \text{ of HR rest}$
67. Dorsal interossei are responsible for
- Adduction
 - Opposition
 - Abduction
 - Extension
68. Stroke volume increases during exercise due to:
- the Frank-Starling mechanism
 - increased ventricular contractility
 - decreased peripheral resistance
 - all of the above
69. _____ strongest ligament in the body
- ischio femoral
 - round ligament
 - pubo femoral
 - ilio femoral
70. Which of the following is the smallest living structural unit of the body?
- Atom
 - Molecule
 - Organelle
 - Cell
71. Which muscle helps to unlock the knee joint
- Quadriceps
 - Piriformis
 - Popliteus
 - Gracilis
72. Glasgow coma scale has ----- subscales.
- 2
 - 3
 - 4
 - 5

73. The most common respiratory complication in stroke is
- Aspiration pneumonia
 - COPD
 - Respiratory failure
 - Plueritis
74. Olympic level endurance fitness is associated with an exceptionally high
- Hemoglobin level
 - Oxygen saturation of the blood
 - Vital capacity
 - Resting stroke volume
75. Which of the following is NOT true about proprioception?
- Intrafusal spindle is a proprioceptive organ
 - Knee and ankle ligament injuries reduce proprioception
 - Diabetic neuropathy can cause loss of proprioception
 - Proprioception increases in elderly
76. Which of the following is/are ambulation aids?
- Walker
 - Parapodium
 - Lofstrand forearm orthosis
 - All the above
77. Which of the following is head CTSO?
- Halo orthosis
 - SOMI
 - Philadelphia orthosis
 - Milwaukee brace
78. How many nucleotides are required to code for a single amino acid?
- Twenty
 - five
 - three
 - One
79. Muscles of mastication is supplied by
- Glossopharyngeal nerve
 - Facial nerve
 - Vagus nerve
 - Trigeminal nerve
80. The most important care to be given in bed ridden patient is?
- Assessment of contracture
 - Passive exercises and frequent position change in bed
 - Incentive Spirometry
 - Standing balance
81. Which is the pacemaker of the heart?
- SA node
 - AV node
 - AV bundle
 - Purkinje fibres

82. The normal cadence is
- 40 -50
 - 70-80
 - 150-160
 - 110-120
83. Laser canes can be useful in
- Hemiplegic gait
 - Freezing of gait
 - Ataxic gait
 - None of the above
84. Anterior interosseous nerve is a branch of
- Radial Nerve
 - Ulnar Nerve
 - Median Nerve
 - Axillary Nerve
85. Which membrane surrounds the lungs?
- the pericardium
 - the pleura
 - the mediastinum
 - the diaphragm
86. Conversion of electromagnetic energy to thermal energy is seen in
- Ultrasound therapy
 - Short wave diathermy
 - Contrast bath
 - Paraffin bath
87. A bed bound patient with non-blanchable erythema, with intact skin over sacrum is
- Stage I pressure ulcer
 - Stage II pressure ulcer
 - Stage III pressure ulcer
 - Stage IV pressure ulcer
88. What hormone does the thyroid produce?
- thyroid stimulating hormone
 - calcitriol
 - thyroxine
 - parathyroid hormone
89. Shifting of mediastinum to right may occur in
- Right collapse
 - Left collapse
 - Right pleurisy
 - None of the above

90. Which of the following motions is identified with the corresponding action? (Action- Turning palm of hand over to face in the anterior direction, dorsum of the hand is pointed downward toward the floor.)
- Pronation
 - Supination
 - Abduction
 - Adduction
91. Which is not true for percussion
- It is done with fingers and thumb adducted
 - The sound of percussion should be hollow sound
 - The rate of percussion between 100-475 times per minute.
 - The dominant hand pressure is more than non dominant hand
92. A newborn baby exhibits a reflex that includes: hand opening, abducted and extended extremities following a jarring motion. Which of the following correctly identifies the reflex?
- ATNR reflex
 - Startle reflex
 - Grasping reflex
 - Moro reflex
93. What is a nurse attempting to minimize by getting close to a patient during a manual handling procedure?
- the load arm
 - the size of the fulcrum
 - the effort arm
 - the patient's weight
94. Which structures constitute the "upper respiratory tract"?
- nose, pharynx and larynx
 - larynx, epiglottis and bronchi
 - trachea, bronchi and bronchioles
 - terminal bronchioles, alveoli and pleurae
95. The benefits of aerobic training are all EXCEPT
- Decreases the myocardial oxygen demand for given load
 - Decreases peripheral resistance
 - Increases stroke volume
 - Increases the maximum heart rate
96. Acapella and flutter are devices with
- Positive expiratory pressure
 - Forced expiratory pressure
 - Manual hyperinflation
 - Active cycle of breathing
97. The term "cellular respiration" is applied to:
- exchange of gases in the lungs
 - ventilation of the lungs (breathing)
 - exchange of gases in the body tissues
 - the production of ATP in the cells

98. The position of the lung is up to

- a) T8
- b) T10
- c) T12
- d) T7

99. A patient has fallen off a bicycle and fractured the head of the proximal fibula. A cast was placed on the patient's lower extremity. Which of the following is the most probable result of the fall?

- a) Peroneal nerve injury
- b) Tibial nerve injury
- c) Sciatic nerve injury
- d) Femoral nerve injury

100. In what part of the kidney are the glomeruli located?

- a) In the cortex
- b) In the medulla
- c) In the hilus
- d) In the minor calyces

