



**VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM**  
**(Deemed to be University under section 3 of the UGC Act 1956)**

**Ph.D Entrance Test – November – 2025**

**Faculty of Physiotherapy**

**Instructions / Note:**

1. Answer all the questions. Each question carries one mark.
2. No negative marks for wrong answers.
3. Read each question carefully and answer in the OMR sheet provided for each question with only blue/ black pen to fill the circles in the OMR Sheet.
4. Question number 1 - 35 questions belong to Research Methodology component and Question number 36-70 questions belong to the subject at PG level
5. Return the question paper along with the OMR sheet.

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36. Which of the following is not a component of the “basic concepts” in exercise therapy (as per the unit)?
  - A. Range of Motion (ROM)
  - B. Flexibility
  - C. Muscular endurance
  - D. Pain threshold
37. The principle that states the body must be exposed to a workload greater than that to which it is accustomed in order to produce adaptation is known as \_\_\_\_\_
  - A. Specificity
  - B. Reversibility
  - C. Overload
  - D. Individuality
38. Which technique is best described as combining stretching and contracting a muscle in a specific pattern (e.g., contract–relax) to improve neuromuscular function?
  - A. Static stretching
  - B. Ballistic stretching
  - C. PNF (Proprioceptive Neuromuscular Facilitation)
  - D. Aquatic therapy



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39. In postural and gait training, the focus is on \_\_\_\_\_
- A. Only strengthening exercises
  - B. Only aerobic endurance
  - C. Postural correction, ergonomic advice, gait analysis & re-education
  - D. None of the above
40. Which of the following is not one of the “types of exercises” as described in the unit?
- A. Active-assisted
  - B. Resisted
  - C. Aerobic endurance
  - D. Passive
41. Which of the following outcome-measures would best assess functional improvement after an exercise therapy programme in a geriatric population?
- A. Grip strength only
  - B. 6-Minute Walk Test (6MWT) or Timed Up & Go (TUG)
  - C. Resting heart rate
  - D. Body weight
42. Which of the following is a valid reason for using core stabilization exercises in therapy?
- A. To increase flexibility of lower limbs only
  - B. To improve lumbo-pelvic control, balance, and functional task performance
  - C. To reduce aerobic capacity
  - D. To eliminate need for gait training
43. An exercise therapy program for a patient with COPD (cardiopulmonary disorder) must consider which of the following special modifications?
- A. Maximal resistance with no rest
  - B. No aerobic component
  - C. Low to moderate intensity aerobic training, and monitoring of vital parameters / dyspnoea
  - D. Only passive stretching
44. Which of the following best defines “impedance” in the context of electrotherapy?
- A. The rate of flow of electrons through a conductor
  - B. The opposition offered by biological tissues to the flow of alternating current, combining resistance, capacitance and inductance
  - C. The duration of each electrical pulse delivered in a stimulation device
  - D. The minimum voltage required to depolarize a nerve fiber



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45. Which statement correctly describes the excitability of nerve vs muscle in response to electrical stimulation?
- A. Muscle fibers require lower current intensity than sensory nerves to elicit contraction
  - B. Sensory nerves are stimulated at lower thresholds than motor nerves, which are stimulated before muscle fibers
  - C. Motor nerves (innervating muscle) generally have lower threshold for stimulation than sensory nerves
  - D. Both nerve and muscle fibers have identical thresholds if pulse duration is identical
46. The primary mechanism of pain relief with high-rate ( $\approx 100$  Hz) TENS is believed to be \_\_\_\_\_
- A. Direct depolarization of motor fibers producing muscle contraction
  - B. Inhibition of nociceptive signal transmission via the gate-control mechanism
  - C. Thermal heating of deeper tissues
  - D. Ion migration across the skin (iontophoresis)
47. What tissue response is primarily targeted by pulsed electromagnetic fields or micro-currents in wound healing?
- A. Motor nerve depolarization
  - B. Thermal heating of collagen
  - C. Cellular proliferation, protein synthesis, and collagen formation
  - D. Immediate muscle tetany
48. Which current modality uses two medium-frequency alternating currents crossing in tissues to generate a lower "beat" frequency?
- A. Faradic current
  - B. Galvanic current
  - C. Interferential therapy (IFT)
  - D. Shockwave therapy
49. Which parameter would you alter to change the quality (e.g., from twitch to tetanic contraction) of muscle stimulation?
- A. Frequency
  - B. Electrode size
  - C. Skin temperature
  - D. Distance between electrodes
50. What is the main safety precaution when applying electrotherapy around the neck region?
- A. Avoid skin contact altogether
  - B. Avoid placing electrodes over carotid sinus or anterior neck because of risk of reflex hypotension or laryngospasm
  - C. Use maximum intensity for faster results
  - D. Only use direct current modality



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51. Which modality is primarily indicated for deep heating and increasing tissue extensibility in fibrous tissue and joint capsules?
- A. Low-frequency galvanic stimulation
  - B. High frequency short-wave diathermy
  - C. TENS at 100 Hz
  - D. Low intensity micro-current therapy
52. When using electrodiagnosis (e.g., EMG/nerve conduction) the primary concern in relation to electrotherapy is \_\_\_\_\_
- A. Heating of tissue due to current
  - B. Incorrect waveform selection
  - C. Safety in the presence of metal implants or pacemakers
  - D. Skin electrode adhesive quality
53. In gait analysis, the “stance phase” of the gait cycle refers to \_\_\_\_\_
- A. When both feet are off the ground
  - B. The period from heel contact to toe-off of the same foot
  - C. The swing of the non-supporting limb
  - D. The period when the body is airborne after toe-off
54. Which instrumentation is primarily used to measure ground reaction forces during gait or balance tasks?
- A. Goniometer
  - B. Electromyography (EMG)
  - C. Force plate (force platform)
  - D. Dynamometer
55. Which of the following describes a “first-class lever” in human biomechanics?
- A. The effort is between fulcrum and load
  - B. The fulcrum is between effort and load
  - C. The load is between fulcrum and effort
  - D. None of the above
56. Which joint is most responsible for shock absorption and adaptation when the foot strikes the ground in normal walking?
- A. Hip joint
  - B. Knee joint
  - C. Ankle joint (talocrural + subtalar complex)
  - D. Shoulder joint



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57. Friction at the shoe–floor interface during gait is best described as which type of mechanics factor?
- A. Internal joint moment
  - B. External force resisting motion/sliding
  - C. Muscle activation pattern
  - D. Ergonomic workstation adaptation
58. Which joint-angle measurement device is most suited for simple clinical goniometry?
- A. Motion capture camera system
  - B. Force plate
  - C. Standard two-arm goniometer
  - D. Inertial sensor cluster
59. During the gait cycle, which joint moment is greatest during mid-stance in normal walking?
- A. Hip abduction moment
  - B. Knee flexion moment
  - C. Plantarflexion moment at ankle (preparation for push-off)
  - D. Inversion moment at subtalar joint
60. Which of the following best describes the difference between “examination” and “evaluation” in physiotherapy practice?
- A. Examination refers only to subjective history; evaluation only to objective tests.
  - B. Examination comprises history, systems review, tests & measurements; evaluation is the clinical judgment made based on those findings.
  - C. Evaluation is only for neurological patients; examination only for musculoskeletal.
  - D. Examination and evaluation are interchangeable terms.
61. Which manual therapy approach emphasizes assessment of accessory (joint-play) movements, graded mobilizations, and reassessment after each intervention?
- A. Mulligan Concept
  - B. Maitland Concept
  - C. McKenzie Method
  - D. Cyriax Method
62. In a patient post-stroke with hemiplegia, which of the following assessments is especially critical from a neurological physiotherapy standpoint?
- A. Only joint range of motion of the unaffected limb
  - B. Only subjective pain questionnaire
  - C. Multiple domains including motor function, balance, sensation, gait, functional mobility.
  - D. Only strength-testing of unaffected limb



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63. Which of the following is a key functional test you would include in an assessment of a patient with musculoskeletal injury impacting mobility?
- A. Iso-strength testing of the eyes
  - B. Gait assessment, and functional movement of the injured region (e.g., stair climb, single-leg squat)
  - C. Only laboratory blood tests
  - D. Only MRI imaging results
64. Which of the following statements is true regarding the role of physiotherapy in spinal cord injury rehabilitation?
- A. The focus is only on passive interventions; no functional training is needed
  - B. The focus includes preventing secondary complications (e.g., contractures, pressure sores), promoting mobility, strength, balance, and functional independence
  - C. Only bedrest is required throughout rehabilitation
  - D. Neurological physiotherapy is not relevant in spinal cord injury
65. In a pre-operative physiotherapy protocol for total hip replacement (THR), which component is important to include?
- A. No education to the patient regarding post-op expectations
  - B. Pre-operative strength training of gluteal and quadriceps muscles, education on hip precautions, functional mobility training
  - C. Only passive range of motion after surgery, ignoring muscle strength
  - D. High-impact sports training before surgery
66. Which of the following neurology-related conditions is commonly managed by physiotherapists specializing in neuro-rehabilitation?
- A. Simple ankle sprain
  - B. Parkinson's disease
  - C. Acute uncomplicated sinusitis
  - D. Minor superficial skin abrasion
67. Which of the following is correct regarding a soft tissue injury (e.g., hamstring strain) rehabilitation protocol?
- A. Immediately initiate maximal sprinting and jumping
  - B. Use phased progression: acute pain control & protection → restore range & muscle activation → strengthening and sport-specific functional tasks → return to sport
  - C. Immobilize permanently
  - D. Ignore any muscle activation until full pain-free range achieved



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68. Which of the following best describes the “inspection” component during a cardiopulmonary assessment?
- A. Listening for heart and lung sounds
  - B. Observing the patient’s posture, breathing pattern, chest wall movement, use of accessory muscles, cyanosis or oedema
  - C. Measuring arterial blood gases
  - D. Performing spirometry
69. Which spirometry parameter is most characteristic of an obstructive lung disease?
- A. FEV<sub>1</sub>/FVC ratio significantly reduced (< 0.70)
  - B. Both FEV<sub>1</sub> and FVC proportionally reduced but ratio normal
  - C. Only FVC reduced while FEV<sub>1</sub> normal
  - D. FEV<sub>1</sub>/FVC ratio increased (> 0.80)
70. Which of the following findings during auscultation of the heart would most likely indicate a valvular heart disease?
- A. Normal S1 and S2, no murmurs
  - B. Presence of a systolic murmur heard at the apex radiating to the axilla
  - C. Only diminished lung sounds
  - D. Silent chest with no heart sounds

