BRAINWARE UNIVERSITY

Term End Examination 2021 - 22
Programme – Bachelor of Physiotherapy
Course Name – Basics of Biomechanics
Course Code - BPT204
(Semester II)

Time allotted : 1 Hrs.15 Min. **Full Marks : 60**

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question) 1 x 60=60

Choose the correct alternative from the following :

(1) Centre of gravity of adult human in the anatomical position is slightly
a) Anterior to S1 vertebra b) Posterior to S1 vertebra
c) Anterior to S2 vertebra d) Posterior to S2 vertebra

(2) Which is not a saddle joint?
a) Carpometacarpal of thumb b) Ankle
c) Sternoclavicular d) Acromio clavicular

(3) Normal carrying angle is
a) 0 – 20 degree b) 0-30 degree
c) 0-10 degree d) 0-40 degree

(4) Minimal muscle force is required when the joints is on
a) Closed pack position b) Loose pack position
c) In between close and loose pack position d) In extension

(5) Which class is lever of power
a) 1st b) 2nd
c) 3rd d) 4th

(6) Which is not an anatomical pulley
a) FDP contraction b) Quadriceps contraction
c) Hamstring contraction d) Peroneal contraction

(7) A small carrying angle means there is a risk of_____
a) Inferior dislocation b) Posterior dislocation
c) Superior dislocation d) Anterior dislocation

(8) The trabecular system is weak in the spine

a) Anteriorly
b) Posteriorly
c) Laterally
d) In the middle

(9) Which is the most important muscle to produce upwards rotation of the scapula

a) Serratus anterior
b) Trapezius
c) Levator scapulae
d) Deltoid

(10) Which muscle around the hip is analogous to deltoid

a) Gluteus maximus
b) Gluteus minimus
c) Gluteus medius
d) Iliopsoas

(11) Which two muscles act to prevent entrapment of menisci during knee motion

a) Semitendinosus & popliteus
b) Semimembranosus & popliteus
c) Sartoris & popliteus
d) Gastrocnemius & popliteus

(12) Which is the commonest ligament injury in ankle

a) Calcaneo fibular
b) Anterior talofibular
c) Posterior talofibular
d) LCL

(13) The joint which is able to withstand the most compressive force

a) Facet joint
b) Hip joint
c) Knee joint
d) Ankle joint

(14) The primary contributor to the resistance to passive stretching is

a) Cross bridges of myosin filament
b) Titin
c) Thixotrophy of muscle
d) Stiffness of tendon

(15) Low back pain patient which muscle is an important contributor to the symptoms

a) Erector spine
b) Iliopsoas
c) Obliques
d) Hip extensors

(16) Second class lever will always have a lever arm

a) Equal to 1
b) More than 1
c) Less than 1
d) More than 2

(17) In pulled elbow syndrome there is dislocation of

a) Radio-humeral joint
b) Radio-ulnar joint
c) Humero-ulnar joint
d) Wrist joint

(18) In triceps paralysis which shoulder muscle can substitute for it

a) Anterior deltoid
b) Posterior deltoid
c) Supraspinatus
d) Short head of biceps brachi

(19) At which knee flexion angle the moment arm is maximum

a) 45 degree
b) 60 degree
c) 90 degree
d) 30 degree

(20) In squatting the JRF in patellofemoral joint may reach

a) 10 times of body weight
b) 8 times of body weight
c) 5 times of body weight
d) 2 times of body weight

(21) An increased Q angle depicts

a) Excessive medial force
b) Excessive lateral force
c) Excessive quadriceps force
d) Decreases medial force

(22) Hyaline cartilages are found in

a) IVD
b) Ears
c) Epiglottis
d) Joints

(23) The hip joint congruence is best in

a) Flexion, adduction and internal rotation
b) Flexion, abduction & external rotation
c) Extension, abduction & external rotation
d) Extension, adduction & internal rotation

(24) Shear stress is more in

a) Coxa vara
b) Coxa valga
c) Femoral anteversion
d) Femoral retroversion

(25) Zone of weakness in femur is that

a) Where system trabeculae is relatively thin
b) Blood supply is less
c) muscle coverage is less
d) Ligaments are slack

(26) Delayed onset muscle soreness is most severe at

a) 5-10 hours
b) 10 – 30 hours
c) 30 – 45 hours
d) 45 – 60 hours

(27) In a flexed knee rotation in either direction stretches which structure

a) PCL
b) ACL
c) MCL
d) LCL

(28) Instability occurs at which degree sprain?

a) 1 degree
b) 2 degree
c) 3 degree
d) 2 & 3 degree

(29) In functional position of hand which muscle length is kept at optimal length

a) Wrist extensor
b) Wrist flexor
c) Finger extensor
d) Finger flexors

(30) For meniscus injury there should be

a) Shear of compressed knee
b) Torsion of compressed knee
c) Shear and torsion of knee
d) Torsion of extended knee

(31) The arthrokinematics of shoulder flexion is

a) Roll and slide along joints longitudinal diameter
b) Roll and slide along transverse diameter
c) Spin movement of articular surface
d) A roll of the articulating surface

(32) In which condition muscle force production is more?

a) Less velocity middle range
b) More velocity middle range
c) Less velocity outer range
d) More velocity inner range

(33) Following tissue stabilize Gleno humeral joint except

a) Coraco humeral ligament
b) Superior capsule of the glenohumeral joint
c) Biceps brachi
d) Rotator Cuff

(34) When two forces applied from one point as the angle between the forces decrease the resultant force.

a) Decrease
b) Increase
c) Remains same
d) Becomes twice

(35) Location of centre of mass of body segment is at _____ % from proximal end

a) 0.4
b) 0.5
c) 0.45
d) 0.55

(36) Weight of HAT is about _____ % of bodyweight

a) 40 %
b) 50 %
c) 60 %
d) 70 %

(37) The centre of gravity of HAT is at

a) T10
b) T11
c) L1
d) T9

(38) Biceps brachii as an elbow flexor is most effective at _____ elbow flexion range

a) 45 degree
b) 60 degree
c) 90 degree
d) 120 degree

(39) At slow speed injury the failure of ligament results in

a) Ligament disruption
b) Avulsion
c) Complete tear
d) Mild tear

(40) The inability to control pronation by _____ results in tendonitis.

a) Peroneus longus.
b) Peroneus brevis
c) Peroneus tertius.
d) Opponens pollicis

(41) The density of bone is

a) % of mineralized tissue
b) % of non-mineralized tissue
c) Mineralized tissue/total bone tissue volume
d) Non mineralized tissue/total bone tissue volume

(42) Which is not a part of the stress–strain curve?

a) Elastic region
b) Plastic region
c) Yield point
d) Nylon region

(43) The most mobile type of joint is the _____ joint.

a) ball-and socket
b) saddle
c) pivot
d) hinge

(44) Which group contains examples of flat bones?

a) Femur, humerus, skull
b) Ribs, carpals, tarsals
c) Ribs, skull, scapula
d) Carpals, clavicle, vertebrae

(45) Stress is

a) the ratio of the change in length to the resting length
b) the amount of force at a particular strain
c) the force per unit area
d) the stored mechanical energy

(46) As a person sits from a standing position, what is the predominant contraction type in the lower extremity?

a) Concentric
b) Eccentric
c) Isotonic
d) Isometric

(47) A single neuron and all the muscle cells it innervates is ____.

a) a peripheral nerve
b) a spinal nerve
c) a motor pool
d) a motor unit

(48) The GTO is sensitive to ____.

a) muscle length
b) movement
c) joint position
d) muscle tension

(49) Fibers of the muscle spindle are called ____.

a) intrafusal
b) extrafusal
c) supraspinal
d) propriospinal

(50) Which structure is not on the scapula?

a) Inferior angle
b) Glenoid fossa
c) Coracoid process
d) Radial notch

(51) Impingement at the shoulder can be minimized by ____ motion.

a) shoulder abduction
b) shoulder flexion
c) shoulder internal rotation
d) shoulder external rotation

(52) Rotator cuff problems can be exacerbated by shoulder ____.

a) flexion
b) extension
c) abduction
d) adduction

(53) A motor unit is _____

a) one neuron and one muscle fiber
b) all of the neurons and muscle fibers in a muscle
c) one neuron and all of the muscle fibers it connects to
d) one fiber and all of the neurons that connect to it

(54) The all-or-none principle refers to ____.

a) a muscle
b) a muscle fiber
c) a muscle fascicle
d) a motor unit

(55) Which structure does not play a role in the impingement area of the shoulder?

a) Coracoacromial ligament
b) Supraspinatus muscle
c) Subacromial bursa
d) Suprascapular notch

(56) The structure that connects the radius to the ulna is the ____.

a) interosseous membrane
b) annular ligament
c) ulnar collateral ligament
d) radial collateral ligament

(57) The sacral movements are ____

a) flexion, extension, abduction, adduction, and rotation
b) flexion, extension, nutation, and counternutation
c) flexion, extension, and rotation
d) flexion and extension

(58) These bone cells are responsible for sensing mechanical stress.

a) Osteoclasts
b) Osteopaths
c) Osteoblasts
d) Osteocytes

(59) Building new bone at the same site that old bone is being removed is called _____.

a) modeling
b) remodeling
c) resorption
d) micromodeling

(60) The bone in the distal part of the femur is replaced every _____.

a) 5 to 6 months
b) 10 to 12 months
c) 2 years
d) 4 years