



JEPAS(PG)-2020
Master of Prosthetics & Orthotics (MPO)-2020

Duration: 90 minutes

Full Marks: 100

Instructions

1. All questions are of objective type having four answer options for each. Only one option is correct. Correct answer will carry full marks 1. In case of incorrect answer or any combination of more than one answer, $\frac{1}{4}$ mark will be deducted.
2. Questions must be answered on OMR sheet by darkening the appropriate bubble marked A, B, C, or D.
3. Use only **Black/Blue ball point pen** to mark the answer by complete filling up of the respective bubbles.
4. Mark the answers only in the space provided. Do not make any stray mark on the OMR.
5. Write your roll number carefully in the specified locations of the **OMR**. Also fill appropriate bubbles.
6. Write your name (in block letter), name of the examination centre and put your full signature in appropriate boxes in the OMR.
7. The OMR is liable to become invalid if there is any mistake in filling the correct bubbles for roll number or if there is any discrepancy in the name/ signature of the candidate, name of the examination centre. The OMR may also become invalid due to folding or putting stray marks on it or any damage to it. The consequence of such invalidation due to incorrect marking or careless handling by the candidate will be sole responsibility of candidate.
8. Candidates are not allowed to carry any written or printed material, calculator, docu-pen, log table, wristwatch, any communication device like mobile phones etc. inside the examination hall. Any candidate found with such items will be **reported against** & his/her candidature will be summarily cancelled.
9. Rough work must be done on the question paper itself. Additional blank pages are given in the question paper for rough work.
10. Hand over the OMR to the invigilator before leaving the Examination Hall.



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1) CAM and Ratchet lock type joint mechanism is used in:

- a) Prosthetic knee.
- b) Prosthetic elbow.
- c) Prosthetic wrist.
- d) Prosthetic hip.

2) Functional foot orthosis should be aligned in:

- a) Subtalar joint in neutral position.
- b) Subtalar joint in inversion.
- c) Subtalar joint in eversion.
- d) Subtalar joint in neutral with midtarsal joint in plantarflexion.

3) Which of these back braces is primarily used for stable vertebral anterior compression fractures:

- a) Williams brace.
- b) Chairback brace.
- c) Taylor brace.
- d) Knight brace.

4) Which of the following joint will require minimal voluntary control:

- a) Weight activated Prosthetic knee.
- b) Constant friction Prosthetic knee.
- c) Polycentric Knee.
- d) Hydraulic knee joint.

5) The patient with plantarflexors weakness can be prescribed with following type of orthosis:

- a) Foot drop stop.
- b) Reverse foot drop stop.
- c) Inside T bar.
- d) Outside T bar.

6) Which lumbar segment is the most mobile:

- a) L2-L3.
- b) L4-L5.
- c) L3-L4.
- d) L1-L2.

7) Wheaton brace is designed to maintain:

- a) Forefoot abduction.
- b) Forefoot adduction.
- c) Hindfoot adduction.
- d) Hindfoot abduction.

8) Main principles of CRS socket:

- a) Longitudinal depressions added in the socket walls.
- b) Open release areas are created between the depressions that receive the displaced tissue.
- c) Requires selective pressure.
- d) All of the above.

9) Screw in socket is indicated in:

- a) Wrist disarticulation.
- b) Long transradial amputation.
- c) Elbow disarticulation.
- d) Shoulder disarticulation.

10) Another name of the chairback splint is:

- a) Antero-Posterior control lumbo-Sacral Orthosis.
- b) Antero-Posterior and Medio-lateral control Lumbo-Sacral Orthosis.
- c) TLSO moulded.
- d) None of the above.

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- 11) Flexible hinges is indicated for:
- Amputation through the proximal third of the forearm.
 - Amputation through the distal third of the forearm.
 - Amputation through the middle third of the forearm.
 - Amputation through mid of the forearm.
- 12) Which of the following statement is false about camber angle provided in the active wheelchair:
- Increasing propulsion.
 - Increases antero-posterior stability of the wheelchair.
 - Increases medio-lateral stability of the wheelchair.
 - Ease of manoeuvres.
- 13) In which of the following sub-phases, the lateral wall above the trochanter comes into play in a transfemoral Prosthesis user:
- Initial contact.
 - Loading response.
 - Pre-swing.
 - Mid swing.
- 14) TRAC interface incorporates design elements from:
- Split socket and three quarter type socket.
 - Split socket and supracondylar socket.
 - Muenster socket and northwestern socket.
 - Muenster and suprastyloid socket.
- 15) Which of the following crutches should be prescribed in a patient with weak hand grip:
- Triceps crutch.
 - Elbow crutch.
 - Forearm platform crutch.
 - Axillary crutch.
- 16) Most effective wt. relieving orthosis in LCPD is:
- Toronto orthosis.
 - Glimcher orthosis.
 - Trilateral hip abduction orthosis.
 - Craig bar.
- 17) Which is not indication of KAFO in paraplegia is:
- Quadriceps strength less than "Fair+" on manual muscle testing.
 - Impaired or absent knee proprioception.
 - Severe hyperextension thrust during stance.
 - Moderate to severe plantarflexion spasticity.
- 18) Intra-abdominal pressure principle is the part of which of the following braces:
- ASH Brace.
 - Milwaukee brace.
 - Charleston bending brace.
 - None of the above.
- 19) Which of the following transfemoral socket design comes under sub-ischial category:
- Quadrilateral.
 - MAS.
 - Ramal containment.
 - Ischial containment.
- 20) At which level of following Partial foot amputation, there will be larger pelvic rise in the terminal stance:
- Toe disarticulation of gr8 toe.
 - Chopart amputation.
 - Metatarsal-Phalangeal level amputation.
 - Trans Metatarsal amputation.

21) Which of the following cervical orthosis does not limit rotation:

- a) Halo vest.
- b) Minerva brace.
- c) Aspen collar.
- d) Sterno-occipital-mandibular immobilizer (SOMI).

22) Which of the following wheelchair feature is affected by Sit to back angle:

- a) Camber angle.
- b) Wheelie.
- c) Hanger angle.
- d) Tilt in space angle.

23) Number of peak of vertical component of ground reaction force during running gait is/are:

- a) One.
- b) Two.
- c) Three.
- d) Zero.

24) In a four-point crutch gait pattern:

- a) Right crutch and leG foot move together followed by leG crutch and right foot.
- b) Right crutch and right foot together followed by leG crutch and leG foot.
- c) Both crutch moves together followed by feet together.
- d) Right crutch followed by leG foot, followed by leG crutch which is followed by right foot.

25) Functional foot orthosis should be aligned in:

- a) Subtalar joint in neutral position.
- b) Subtalar joint in inversion.
- c) Subtalar joint in eversion.
- d) Subtalar joint in neutral with midtarsal joint in plantarflexion.

26) In offset knee joint:

- a) Mechanical axis is posterior to anatomic knee axis.
- b) Mechanical knee axis is anterior to anatomic knee axis.
- c) Mechanical knee axis is parallel to anatomical knee axis.
- d) All alignment can be possible.

27) For pes varus, what shoe modification is required:

- a) Thomas heel.
- b) Lateral wedge.
- c) Heel cushion.
- d) MT bar.

28) Which type of following socket is not a shoulder disarticulation socket:

- a) AHI socket.
- b) Infraclavicular socket.
- c) X-frame socket.
- d) Perimeter frame type socket.

29) Step up hinges amplify the excursion of anatomic elbow joint by a ratio of:

- a) 3:2.
- b) 3:1.
- c) 1:1.
- d) 2:1.

30) Options for pretibial compartment paralysis are except:

- a) Piano wire AFO.
- b) Plantarflexion assist AFO.
- c) Metal alloy dorsiflexion assist AFO.
- d) Flexible plastic AFO.

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- 31) In which of the following surgical procedure, the cut posterior section of calcaneal bone is rotated 90 degree and is arthrodesed to the beveled distal tibial and fibular surface:
- Pirogoff amputation.
 - Boyd amputation.
 - Chopart amputation.
 - Lisfranc amputation.
- 32) Which orthosis is least effective shoe for metatarsus adductus:
- Corrective shoes.
 - Tarsal pronator shoes.
 - Bebax shoe.
 - Straight last shoe.
- 33) Which spinal segment has the greatest range of motion:
- Cervical.
 - Thoracic.
 - Lumbar.
 - Sacral.
- 34) Where does most of cervical rotation occur:
- C1-C2.
 - C3-C4.
 - C4-C5.
 - C5-C6.
- 35) Estimated knee flexion angle of commonly used mechanical prosthetic knee in the Transfemoral Prosthetic user during mid-stance:
- Near to normal angle of knee flexion.
 - Its approximately 10 degrees of knee flexion.
 - Its zero degree of knee flexion angle.
 - Its approximately 20 degrees of knee flexion.
- 36) What control strategy is most utilized in the upper limb Prosthesis for a specific activity Prosthesis in sports and recreation:
- Battery powered Electric switch control.
 - Battery powered Myoelectric control.
 - Body powered cable controlled.
 - None of the above.
- 37) Prescription for controlling knee flexion during the stance phase in the presence of knee flexion contracture:
- KAFO with a serrated knee lock.
 - KAFO with a drop knee lock.
 - KAFO with free motion knee joint.
 - KAFO with offset knee joint.
- 38) Which of the following wrist unit is frequently utilized in activity specific Prosthesis:
- Quick connect and disconnect wrist unit.
 - Flexion and extension wrist unit.
 - Rotational wrist unit.
 - Frictional wrist unit.
- 39) The prosthetic design after Rotationplasty could be:
- Transfemoral prosthesis with foot serving as partial thigh.
 - Rotationplasty is not feasible for prosthetic user.
 - Above knee extension prosthesis.
 - Transtibial prosthesis with foot serving as partial leg.
- 40) The patient with plantarflexors weakness can be prescribed with following type of orthosis:
- Foot drop stop.
 - Reverse foot drop stop.
 - Inside T bar.
 - Outside T bar.

41) Which Body motion is required to control a terminal device of upper limb prosthesis:

- a) Biscapular adduction.
- b) Glenohumeral flexion.
- c) Glenohumeral extension.
- d) Glenohumeral elevation.

42) In northwestern supracondylar socket is characterized by:

- a) Narrow M-L.
- b) Narrow A-P.
- c) Narrow in A-P and M-L direction.
- d) None of the above.

43) Placement of orthotic ankle joint in saggital plane is at:

- a) Distal tip of the medial malleous.
- b) Distal tip of the lateral malleous.
- c) Mid of the medial malleuos.
- d) 1/3 distal to the medial malloeus.

44) The orthosis which primarily an abduction orthosis in DDH is:

- a) Pavlic harness.
- b) Ilfeld orthosis.
- c) Vonrosen orthosis.
- d) Frejka pillow.

45) Ankle rocker occurs when:

- a) Controlled deceleration of the foot – towards the floor occurs.
- b) The tibia advances over the ankle-foot complex from at the end of loading response to the end of the midstance.
- c) Heel rises off the ground surface.
- d) Bodyweight rolls over the first MTP joint through push off at terminal stance.

46) Orthosis for developmental dysplasia of hip is:

- a) Pavlic harness.
- b) Toronto orthosis.
- c) Atlanta orthosis.
- d) Newinton orthosis.

47) Which of the following Cane/crutch is provided to transmit vibration from the ground to the handle:

- a) The blind cane.
- b) 3-tip base cane.
- c) Pilot rolling cane.
- d) Pilot step-up cane.

48) Contraindication of tone reducing AFO:

- a) Mild to moderate spasticity.
- b) Minimal to moderate varus instability of subtalar joint.
- c) Fixed equines deformity.
- d) Need for reduction of hypertonic foot reflex activity.

49) Subtalar instability can be addressed by:

- a) SMO.
- b) AFO.
- c) FO.
- d) UCBL.

50) Type of elbow unit indicated for long Transhumeral Prosthesis can be:

- a) Flexible external hinges.
- b) Metal external hinges.
- c) Internal elbow units.
- d) None of the above.

- 51) Which nerve roots innervate the quadriceps?
a) L1, L2, L3
b) L2, L3, L4
c) L3, L4, L5
d) L4, L5, S1
- 52) What is the leading cause of death in chronic spinal cord injury (SCI)?
a) Heart disease
b) Respiratory disease
c) Genitourinary disease
d) Suicide
- 53) Which of the following disorders gives a patient an "inverted champagne bottle" or "stork leg" appearance?
a) Duchenne muscular dystrophy (DMD)
b) Charcot-Marie-Tooth (CMT)
c) Myasthenia gravis
d) Spinal muscular atrophy
- 54) How does the locking and unlocking of the internal elbow unit is actuated
a) By Gleno-Humeral joint flexion and shoulder elevation
b) By Gleno-Humeral joint extension and shoulder elevation
c) By Gleno-Humeral joint extension and shoulder depression
d) By Gleno-Humeral joint flexion and depression
- 55) What is the total amount of water in our body?
a) 50 % of body weight
b) 60 % of body weight
c) 70 % of body weight
d) 85% of body weight
- 56) Weight distribution when standing on the calcaneous and metatarsal heads is in the ratio of :
a) 50:30%
b) 50:50%
c) 100:0%
d) 50:20%
- 57) Which muscle is known as tailor's muscle?
a) Tibialis posterior
b) Soleus
c) Gastrocnemius
d) Sartorius
- 58) What could be the Prosthetic cause of vaulting in a Transfemoral amputee
a) Longer prosthetic side
b) Loose socket fit causing resulting in piston
c) Extra friction at the knee than required
d) Exaggerated dorsiflexion of the foot
- 59) What is closed packed position for first CMC?
a) Extreme adduction
b) Extreme abduction
c) Extreme extension
d) Both (a) and (b)
- 60) Expandable inner wall with outer rigid double wall socket can be best prescribed in
a) Symes Prosthesis
b) Transtibial Prosthesis
c) Trans-femoral socket
d) None of the above

61) What physical exam finding will be observed in "honeymooner"s palsy"?

- a) Marked wrist and finger drop
- b) Atrophy of abductor pollicis brevis (APB)
- c) Weak elbow extension
- d) Painless weakness and atrophy of hand intrinsic muscle

62) A young adult amputee with long Transfemoral stump could be best prescribed with

- a) Single Axis constant friction Prosthetic knee
- b) Polycentric knee
- c) Weight activated knee
- d) None of the above

63) Which of the following generic classes of foot is better for reducing shear forces during walking

- a) Single axis
- b) Multi axis
- c) SACH
- d) Dynamic response

64) In which of the Prosthesis design shown below require minimum lateral leaning over the Prosthesis side

- a) Hip disarticulation Prosthesis
- b) Knee disarticulation Prosthesis
- c) Trans-femoral Prosthesis design
- d) Symes prosthesis

65) Which of the following wheelchair feature is best suited to accommodate tight hamstring?

- a) Tilt in space
- b) Reclinable back
- c) Camber angle
- d) None of the above

66) What is the most common type of CP?

- a) Mixed type
- b) Dyskinetic
- c) Flaccid
- d) Spastic

67) Medicare K-level used in selection in prosthetic components is based on

- a) Abilities of the patient before the amputation
- b) Current and potential abilities of the patient
- c) Expectation and desires of the patient
- d) None of the above

68) Which muscle known as "steering" muscle?

- a) Deltoid muscle
- b) Suprascapularis muscle
- c) Rotator cuff muscles
- d) Teres muscles

69) Coefficient of friction is maximum in which of the following liners

- a) Silicone gel liners
- b) Silicone elastomers
- c) Urethane liners
- d) EVA foam inserts

70) Which of the following governs physician self-referral for Medicare and Medicaid patients?

- a) Americans with Disabilities Act
- b) Family Medical Leave Act
- c) Maternity Leave Act
- d) Stark Law

71) A patient with a joint replacement would qualify for acute rehabilitation if:

- a) Above the age of 65
- b) Body mass index (BMI) greater than 30
- c) Unilateral hip replacement
- d) Bilateral knee replacement

72) What is the diameter of normal RBC?

- a) 4.3-5.0 μ m
- b) 5.2-5.9 μ m
- c) 6.7-7.7 μ m
- d) 8.4-9.2 μ m

73) The CTS splint is a

- a) Static splint
- b) Static-progressive
- c) Dynamic splint
- d) None of the above

74) Which one of the following may cause minimal piston

- a) Pin with shuttle lock suspension
- b) Elevated vacuum suction suspension
- c) Osteo-Integration
- d) Anatomical locking

75) The axis of the 1st ray is inclined in such a way that dorsiflexion of the 1st ray is accompanied by:

- a) Inversion and abduction
- b) Inversion and adduction
- c) inversion
- d) eversion

76) Following which is not example of indirect control of byproduct of muscle contraction?

- a) Myoacoustic
- b) Muscle bulge
- c) Changes in electrical impedances
- d) Neuroelectric control

77) At which of the following amputation level, high profile partial foot prosthesis is comparatively better to low profile

- a) Metatarso-phalangeal level
- b) Mid-tarsal joint level
- c) Ray amputation
- d) Phalangeal amputation

78) Which of the following is not a factor in stability of the Prosthetic knee in a transfemoral case

- a) Inherent stability of the Prosthetic knee itself
- b) Voluntary control by the patient
- c) Variation in socket design
- d) Alignment stability

79) The centre of Pressure remain at the proximal aspect of the socket in

- a) Knee Disarticulation socket
- b) Trans-Tibial PTB Design socket
- c) Trans-tibial TSB Design socket
- d) Symes socket

80) What is a „safe“ hand position?

- a) Wrist extended, MCP joint flexed, PIP joint extended, DIP joint extended
- b) Wrist flexed, MCP flexed, PIP flexed, DIP flexed
- c) Wrist extended, MCP extended, PIP extended, DIP extended
- d) Wrist flexed, MCP extended, PIP flexed, DIP flexed

- 81) Energy expenditure in case of knee disarticulation prosthetic users is**
- Lower than the below knee prosthetic users
 - Higher than the above knee prosthetic users
 - Lies in between the above knee and below knee prosthetic users
 - None of the above
- 82) K-3 of the activity level (medicare) implies that**
- Person should be restricted community walker
 - Person should be unrestricted indoor walker
 - Person should be unrestricted community walker with variable cadence
 - Person should be restricted community walker with fixed cadence
- 83) If the muscle moment created by hip abductors is lesser than the moment created by COG during mid-stance then**
- Its general phenomenon, there won't be show gait deviation
 - There will be lateral trunk bending towards amputated side
 - There will be lateral trunk bending towards sound side
 - Patient would lean forward to control the fall
- 84) Which of the prosthetic knee is best indicated in case of short Transfemoral amputee with weak musculature**
- Single axis with constant friction
 - Polycentric knee
 - Weight activated knee joint
 - Hydraulic knee joint
- 85) The hanger angle is affected by**
- Sit to back angle
 - Camber angle
 - Wheelie
 - Tilt in space angle
- 86) Examples of irregular bones :**
- Carpals
 - Sternum
 - Vertebral
 - All of the above
- 87) What does the term prehensile refer to?**
- Balance
 - Grasp by wrapping around
 - Weakness in the arm
 - Apprehension
- 88) Which of the following is not a feature of Scheuermann kyphosis?**
- Vertebral body wedging of at least 5 degrees
 - Flattening of curvature with extension
 - Involvement of at least three vertebral bodies
 - Anterior wedging
- 89) Which ligament stabilizes the medial ankle?**
- Posterior talofibular ligament
 - Deltoid ligament
 - Anterior talofibular ligament
 - Calcaneofibular ligament
- 90) Which muscle paralysis causes high stepping gait?**
- Quadriceps
 - Ankle plantarflexion
 - Ankle dorsiflexion
 - Hip extensors
-

- 91) During bench alignment, if the axis of the Prosthetic knee kept forward with respect to the sagittal TKA line
- Patient won't buckle during initial contact
 - Patient won't buckle during terminal stance
 - No effect will occur on the knee
 - It will depend upon the Prosthetic knee type and patient voluntary stability
- 92) Which is the most commonly affected in Dupuytren's contracture?
- The index finger
 - The middle finger
 - The ring finger
 - The pinky finger
- 93) The IC Socket design controls the M-L stability by
- Limiting the abduction of the cut Transfemoral stump
 - Limiting the adduction of the cut Transfemoral stump
 - Letting the patient lean over the Prosthesis
 - Relieving the Ischial weight bearing
- 94) Which of the following statement is false about camber angle provided in the active wheelchair
- Increasing propulsion and maneuvers
 - Increases antero-posterior stability of the wheelchair
 - Increases medio-lateral stability of the wheelchair
 - Increases ability to move on uneven terrain
- 95) What is the mechanism used in the internal elbow unit for locking and unlocking with single wire pull
- CAM lock
 - Ring lock
 - Ratchet lock
 - None of the above
- 96) In adults, at what level does the spinal cord terminate?
- L1
 - L3
 - L4
 - T10
- 97) Based on the mechanical property of the splints, they can be classified into
- Internally powered and externally powered
 - Static and dynamic splints
 - Bar and spring splints
 - None of the above
- 98) The measuring length of the cane, the person's wrist joint should be at level of
- Crest of the pelvis
 - Greater Trochanter of the pelvis
 - ASIS of the pelvis
 - Proximal thigh
- 99) Which of the following disorders gives a patient an "inverted champagne bottle" or "strok leg" appearance?
- Duchenne muscular dystrophy (DMD)
 - Charcot- Marie- Tooth (CMT)
 - Myasthenia Gravis
 - Spinal muscular atrophy
- 100) Seizures in stroke patients are associated with:
- Large parietal or temporal hemorrhages
 - Older age
 - Confusion
 - All of the above

