

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0321]

MARCH 2021

Sub. Code: 2475

(AUGUST 2020 EXAM SESSION)

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR (Regulation 2017-2018)

PAPER V – PROSTHETIC SCIENCE - III

Q.P. Code : 802475

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Briefly explain about upper limb myoelectric prosthesis.
2. Checkout of elbow disarticulation prosthesis.
3. Fabrication procedure of transradial prosthesis.

II. Write notes on:

(8 x 5 = 40)

1. Functional Electric Stimulation.
2. Flexion wrist unit.
3. APRL-Sierra Hook
4. Utah arm.
5. Ball and socket shoulder joint.
6. Prehension Pattern.
7. Neuroprosthesis.
8. Dual control cable system.

III. Short answers on:

(10 x 3 = 30)

1. Mitts.
2. Difference between voluntary opening and voluntary closing hand.
3. Base plate retainer.
4. Forearm lift lever loop.
5. Harness for shoulder disarticulation prosthesis.
6. Elbow lock billet.
7. Controller.
8. Sauter socket.
9. Centri Electric hand.
10. Krukenberg Amputation.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0222]

**FEBRUARY 2022
(AUGUST 2021 EXAM SESSION)**

Sub. Code: 2475

**BACHELOR IN PROSTHETICS AND ORTHOTICS
THIRD YEAR (Regulation 2017-2018)
PAPER V – PROSTHETIC SCIENCE - III
Q.P. Code : 802475**

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on: (3 x 10 = 30)

1. Briefly explain about upper limb myoelectric prosthesis.
2. Transhumeral harnessing system.
3. Explain upper limb prosthesis Terminal devices.

II. Write notes on: (8 x 5 = 40)

1. Types of wrist units.
2. Advantages of Mechanical Hand.
3. Prosthetic Management for Transcarpal Amputation.
4. Types of Terminal Device.
5. Shoulder Disarticulation Suspension System.
6. Trans Radial Prosthetic Components.
7. Levels of Amputation.
8. Trans Humeral Socket Biomechanics.

III. Short answers on: (10 x 3 = 30)

1. What is grasp pattern?
2. Write the parts of the transhumeral prosthesis.
3. Describe about activity specific prosthesis.
4. Indication for external elbow unit.
5. What is voluntary opening and closing?
6. Write the Trim lines of Trans humeral socket.
7. Block diagram of myoelectric prosthesis.
8. What is the Difference between internal and external elbow unit?
9. What is Nudge control unit?
10. Components of myoelectric prosthesis.

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[AHS 0423]

APRIL 2023

Sub. Code: 2475

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR (Regulation 2017-2018 onwards)

PAPER V – PROSTHETIC SCIENCE - III

Q.P. Code: 802475

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Explain about various types of Socket designs for Transradial amputee.
2. What are different sources of body input for Prosthetic controller? With the help of a diagram briefly explain the EMG signal processing in a Typical Myoelectric Control System.
3. Discuss about the Prosthetic management of Bilateral Shoulder Disarticulation Amputee with reference to Hybrid Prosthesis.

II. Write notes on:

(8 x 5 = 40)

1. Terminal Device.
2. Child Amputee Prosthetic Project.
3. Ergo Arm.
4. Alligator.
5. Greifer.
6. Smart Hand
7. Myoacoustic control Prosthesis.
8. Prosthetic Management of Bilateral Transradial Amputee.

III. Short answers on:

(10 x 3 = 30)

1. Internal Elbow unit.
2. Hinges for Elbow Disarticulation Prosthesis.
3. Control Cable System.
4. Michelangelo Hand.
5. Types of Hinges.
6. Load distribution in X- Frame socket.
7. Trans Humeral Prosthesis Socket Suspension.
8. Biomechanical challenges in fitting of Wrist Disarticulation Prosthesis.
9. Biosim.
10. Nudge control Prosthesis.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1123]

NOVEMBER 2023

Sub. Code: 2475

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR (Regulation 2017-2018 onwards)

PAPER V – PROSTHETIC SCIENCE - III

Q.P. Code: 802475

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Enumerate on Biomechanics of Prosthesis control in Shoulder Disarticulation and above Elbow Prosthesis with suitable sketch.
2. Transradial Prosthesis harnessing system.
3. Briefly explain about Upper Limb Myoelectric Prosthesis.

II. Write notes on:

(8 x 5 = 40)

1. Aesthetic / Cosmetic restoration of partial hand amputation.
2. VAPC Electric Elbow.
3. Dorrance Hook.
4. Bio feedback system of Myoelectric Prosthesis.
5. Anthropomorphic Hand.
6. Excursion Amplifier.
7. Nudge control Prosthesis.
8. Multi-Flex Wrist.

III. Short answers on:

(10 x 3 = 30)

1. Hook to cable adapter.
2. Variable friction wrist unit.
3. Excursion amplifier.
4. BeBionic Hand.
5. Mechanics of Transhumeral control cable system.
6. Cosmetic Finger Prosthesis.
7. Triple axis shoulder unit.
8. Tricep's pad.
9. Stump actuated locking hinges.
10. Cosmetic glove.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0424]

APRIL 2024

Sub. Code: 2475

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR (Regulation 2017-2018 onwards)

PAPER V – PROSTHETIC SCIENCE - III

Q.P. Code: 802475

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Explain measurement and casting procedure for Trans-humeral socket.
2. Explain the different types of Wrist units with diagram.
3. Describe Muenster socket design and its principles.

II. Write notes on:

(8 x 5 = 40)

1. Levels of amputation in upper extremity with diagram.
2. What are the functions of a normal anatomical hand?
3. Differentiation between voluntary opening and voluntary closing hand.
4. Explain three types of Becker hand.
5. Explain CAPP terminal device.
6. Explain external power in above elbow prosthesis.
7. Draw a neat sketch showing all the parts and components of Trans-humeral prostheses.
8. Enumerate the components of externally powered TR prosthesis.

III. Short answers on:

(10 x 3 = 30)

1. Biosim.
2. Write the causes of upper extremity amputation.
3. Why partial hand amputee rejects prosthesis?
4. APRL hook.
5. Draw a labelled diagram for levels of Trans-radial stump.
6. Explain passive hand.
7. Robin-aids Mechanical Hand.
8. Stump-Activated Locking Hinge.
9. Draw a labelled diagram of Trans-radial control cable system.
10. Functions of the cosmetic hand.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1125]

NOVEMBER 2025

Sub. Code: 2475

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR (Regulation 2017-2018 onwards)

PAPER V – PROSTHETIC SCIENCE - III

Q.P. Code: 802475

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Compare and contrast the body powered upper limb Prosthesis and externally powered upper limb prosthesis.
2. Classify the terminal device for upper extremity Prosthesis. Describe hook and why does it term a versatile terminal device.
3. Prescription and assessment of Right shoulder disarticulation in young male amputee.

II. Write notes on:

(8 x 5 = 40)

1. Write about historical development of upper extremity Prosthesis in India and abroad.
2. Types of hand and its functions.
3. What are the measurement procedures for shoulder disarticulation?
4. Write the mechanics of Trans-humeral cable control system.
5. Types of Prosthetic hook.
6. Extended Physiologic Proprioception.
7. Prescription criteria of Grieffier Terminal device.
8. Anatomically Contoured Controlled Interface Socket for Trans-radial amputees.

III. Short answers on:

(10 x 3 = 30)

1. Draw and explain flexion wrist unit.
2. Explain step-up hinges Prosthesis and its prescription criteria.
3. Draw and explain internal locking elbow unit.
4. Explain the components of cable control system for Transcranial Prosthesis.
5. What are the major muscles of Shoulder?
6. What are the levels of Partial hand amputation?
7. Write the causes of Upper extremity amputation.
8. Explain in brief mechanics of Bowden cable control system.
9. Define Krukenberg amputation.
10. Aesthetic prosthesis.
