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

[AHS 0321] **MARCH 2021** **Sub. Code: 2472**

(AUGUST 2020 EXAM SESSION)

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR (Regulation 2017-2018)

PAPER II – BIOMECHANICS III

Q.P. Code : 802472

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

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

1. Explain about different types of TR socket biomechanics.
2. Biomechanics of normal spine.
3. Biomechanical principle of spine braces.

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

1. Biomechanics of inter vertebral disk.
2. Lumbar spine loading during normal activities.
3. Biomechanics of corset.
4. Biomechanics of thoracolumbar orthosis.
5. Shear force and bending moment diagram.
6. Open and closed helical spring.
7. Theorem of parallel axis.
8. Airplane splint biomechanics.

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

1. Functional of IV disk.
2. Biomechanical principles of lumbar pad.
3. Five point pressure system.
4. Intra cavity pressure.
5. Pelvic stabilization in spine brace.
6. Stress concentration.
7. Biomechanical principles of fracture bracing.
8. Fluid mechanics.
9. Beam deflection.
10. Force system in LS corset.

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

[AHS 0222] **FEBRUARY 2022** **Sub. Code: 2472**
(AUGUST 2021 EXAM SESSION)

BACHELOR IN PROSTHETICS AND ORTHOTICS
THIRD YEAR (Regulation 2017-2018)
PAPER II – BIOMECHANICS III
Q.P. Code : 802472

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

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

1. Explain the biomechanics of Elbow joint.
2. Write about Biomechanics of spine.
3. Explain the biomechanics of trans-humeral socket.

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

1. Biomechanics of cervical orthosis.
2. Draw a sketch of typical vertebra and explain the parts.
3. Explain Euler's theory of buckling.
4. Explain kinetics and kinematics.
5. What is Scoliosis and its orthotic management?
6. Explain open and closed helical spring.
7. Biomechanics of Wilmington brace.
8. What is myoelectric prosthesis.

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

1. What are the functions of IV disc.
2. Biomechanics of lumbar pad.
3. Define shoulder joint complex.
4. What is difference between power and precision grasp.
5. What is intra cavity pressure.
6. Biomechanics of fracture bracing.
7. What is torsional stress.
8. What is function of pedicle.
9. What is buckling.
10. Biomechanics of Shoulder sling.

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

[AHS 0222] **FEBRUARY 2022** **Sub. Code: 2473**
(AUGUST 2021 EXAM SESSION)

BACHELOR IN PROSTHETICS AND ORTHOTICS
THIRD YEAR (Regulation 2017-2018)
PAPER III – ASSISTIVE TECHNOLOGY
Q.P. Code : 802473

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

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

1. Normal developmental milestone and delayed milestone.
2. Appropriate Technology for making developmental aids.
3. Assistive devices for SCI patients.

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

1. Robotics Arms in Rehabilitation
2. Special gadgets to assist in activities of daily living
3. Developmental and educational toys
4. Draw a neat labelled sketch of Parapodium
5. Care & Maintenance of Wheelchairs
6. Biomechanics of Wheelchair Propulsion
7. Biomechanics of Molded Seat
8. Wheelchair Transfer techniques

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

1. Prone board
2. Low-level cart
3. Tilting frame
4. Tricycle
5. Parallel bar
6. Box seat
7. forearm support Crutch
8. Special Chair for CP Children
9. Modified two wheeler for mobility
10. Walking sticks

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[LH 0815] **AUGUST 2015** **Sub. Code: 2431**

BACHELOR IN PROSTHETICS & ORTHOTICS (BPO)

THIRD YEAR

PAPER I – COMPUTER SCIENCE

Q.P. Code: 802431

Time: Three Hours **Maximum : 100 Marks**

Answer all Questions

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

1. What are the various communication devices that are used to transmit information from one network to another? Explain each.
2. What do you understand by primary and secondary storage devices in computers? Name any five of each.
3. Explain the advantages and disadvantages of CNC, List the major parts of CNC machine tools.

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

1. Explain on Input and output devices.
2. Draw and explain laser printer.
3. Explain the classification of computers. What are the characteristics of computer that differentiate it from all other electronic devices?
4. What is word processing? Describe any five features of word processor.
5. Explain CAD-CAM technologies. Describe product cycle with detailed diagram.
6. Explain various dimensioning commands in 2D Auto CAD with syntax.
7. Write the difference between “rectangular array” and “polar array” commands.
8. List the variety of CNC machines available for product machining.

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

1. Describe different ways for creating presentation using MS-PowerPoint
2. Explain on spreadsheet and its features.
3. Write a short note on Central Processing Unit.
4. Write the role and application of fillet and chamfer commands in 2D?
5. Explain about NC / CNC / DNC systems.
6. Advantages of CNC machine tools.
7. Explain various options available in ZOOM command.
8. Explain with simple component that the CAD/CAM be the best application software for your prosthetics and Orthotics.
9. Explain in brief solid modeling.
10. Explain Autoscanner and its uses in prosthetics.

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[LL 0817] AUGUST 2017 **Sub. Code :2431**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER I – COMPUTER SCIENCE

Q.P. Code: 802431

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. What are the advantages and disadvantages of CAD CAM system in Prosthetic and Orthotic?
2. Explain about five function keys of Auto Cad.
3. Explain about input and output device of computer system.

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

1. Characteristics of computer.
2. Input Devices.
3. Operating system and its function.
4. Network topology.
5. Application and benefit of CAD.
6. Chamfer and fillet.
7. CNC Milling.
8. Computer virus.

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

1. Write three usages of computer.
2. What is bar code reader?
3. What do you understand by system software?
4. Write down the features of Microsoft Excel.
5. What is Modem?
6. Write about secondary devices with example.
7. What is difference between Cartesian and polar coordinate system?
8. What are the modifying tools used in Auto CAD software?
9. What you mean by UCS and WCS?
10. Write about Characteristics of digitizer.

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[LN 0818] AUGUST 2018 **Sub. Code: 2431**

B.Sc. PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER I – COMPUTER SCIENCE

Q.P. Code: 802431

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Describe stepwise facility in CAD CAM system.
2. What you understand by operating system? Write about its function types and features.
3. Explain about CPU and its function in Computer.

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

1. Memory Unit.
2. Window Operating System.
3. Internet and Intranet.
4. Dimensioning in Auto Cad.
5. Function Key in Auto Cad.
6. Scanning system in Prosthetics.
7. Advantage and Disadvantage of CAD CAM.
8. Difference between Mini and Micro Computer.

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

1. Write three types of Printer.
2. What is super Computer?
3. Write three commands used in Unix OS.
4. What you understand by LAN?
5. Write about Automation.
6. Write about scaling.
7. What is an array?
8. What is NC and CNC Machine?
9. What you understand E mail?
10. What is antivirus software?

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[LP 0819] AUGUST 2019 **Sub. Code: 2431**

B.Sc. PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER I – COMPUTER SCIENCE

Q.P. Code: 802431

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Modern Computers.
2. Computer Numeric Control (CNC).
3. Computer Network and Internet.

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

1. MS Power Point.
2. Read Only Memory (ROM).
3. Types of Display Unit.
4. Automation.
5. Arithmetic Logic Unit (ALU).
6. Types of Mouse.
7. Inkjet printers.
8. Compact Disc (CD).

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

1. Define CAM.
2. Uses of Master slide in MS Power Point.
3. Monitors.
4. Steps to insert image in MS Excel.
5. Uses of Printers.
6. Windows OS.
7. List few alignment commands in MS Excel.
8. How to draw a circle in AutoCAD?
9. Uses of group command in AutoCAD.
10. Uses of CAD/CAM in P & O field.

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

[AHS 0321] MARCH 2021 Sub. Code: 2471

(AUGUST 2020 EXAM SESSION)

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR (Regulation 2017-2018)

PAPER I – COMPUTER SCIENCE AND GRAPHICAL COMMUNICATION

Q.P. Code : 802471

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

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

1. Orthographic projection and Isometric projection.
2. Computer Operating System.
3. Computer Numeric Control (CNC).

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

1. Central Processing Unit (CPU).
2. Email and Internet.
3. Functions of Word and Power Point software.
4. A point "**A**" lies on HP and 20mm in front of VP, Draw its projections.
5. A line "**AB**" of Length 50mm lies 20 mm in-front of VP and 20 mm above HP, Draw its projections.
6. Automation and its Application.
7. Steps to enter text in AutoCAD software.
8. Steps involved in fabrication of socket using CAD / CAM technique.

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

1. Steps to add new slides in MS-PowerPoint.
2. Define: Networking.
3. List different generation of computers?
4. Computer viruses.
5. List few input and Output devices.
6. Uses of Compact Disk (CD).
7. Application of Spread sheets.
8. Steps to draw a circle in AutoCAD.
9. Steps to use Mirror command.
10. Advantages of CNC Machines.

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[LH 0815] **AUGUST 2015** **Sub. Code: 2433**

BACHELOR IN PROSTHETICS & ORTHOTICS (BPO)
THIRD YEAR
PAPER III – MOBILITY AND REHABILITATION AIDS

Q.P. Code: 802433

Time: Three hours **Maximum : 100 Marks**

Answer all Questions

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

1. With Illustration explain about the need of special chair for cerebral palsy.
2. Draw and explain the parts of manual standard wheelchair.
3. Explain about the different types of walking frame.

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

1. Explain about the measurement and fabrication of box seat.
2. Discuss about the computer based assistive technology for developmental delays.
3. Discuss about the prescription criteria for molded seat.
4. Explain about the various types of seating cushions available for wheelchair user?
5. Explain the method of transfer techniques of wheelchair user.
6. Discuss about the assessment and measurement of wheelchair user.
7. Discuss about the gait training procedure for auxiliary crutch user.
8. Discuss about the assistive devices for spinal cord injury patients

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

1. What is the function of head support in molded seat?
2. What are the importances of sitting upright?
3. What is the purpose of wheelchair cushion?
4. What is a transfer board?
5. Difference between developmental and educational toys.
6. What is prone board?
7. What is potty chair?
8. What is the use of low-level cart?
9. What is the benefit of modified two wheeler?
10. What is gutter walker?

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[LJ 0816] AUGUST 2016 **Sub. Code :2453**

B.Sc. PROSTHETICS AND ORTHOTICS
(New Syllabus 2013-2014)

THIRD YEAR

PAPER III – MOBILITY AND REHABILITATION AIDS

Q.P. Code: 802453

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Write in detail about walking aids.
2. Draw and describe about wheel chair.
3. Compare the manual wheel chair with powered wheel chair.

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

1. What is the features and benefits of sitting upright in a wheel chair?
2. Explain seat cushions and pressure relief techniques.
3. Measurement and fabrication of box seat.
4. Method of transfer technique in a wheel chair.
5. Write about crutches.
6. Safety features in a wheel chair.
7. Drive control mechanisms in a powered wheel chair.
8. Gait pattern of auxiliary crutches.

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

1. Explain about tricycles.
2. What is cane gait and walker gait?
3. Write about Head rest.
4. What is gutter walker?
5. Write about molded seats.
6. Write about some assistive devices for SCI patients.
7. Motorized tricycles.
8. Delayed milestone.
9. Standing and tilting frame.
10. How you design mobility aid for asymmetrical leg length?

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[LK 0217] FEBRUARY 2017 **Sub. Code :2433**

B.Sc. PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER III – MOBILITY AND REHABILITATION AIDS

Q.P. Code: 802433

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. What is mobility aids? Describe one mobility aid with diagram.
2. Write in detail about manual wheel chair and motorised wheel chair.
3. Explain about different types of walking accessories.

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

1. Auxillary crutches.
2. Four point gait.
3. Pressure relief in seating surfaces.
4. Ideal seating arrangement in a walker.
5. Drive control mechanisms in a powered wheel chair.
6. Fabrication of box seat.
7. Safety features in a wheel chair.
8. Tricycles.

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

1. Walker gait.
2. Crutch tip.
3. Arm rest.
4. Transfer techniques.
5. Standing and tilting frame.
6. Seat cushions.
7. Positioning of forearm pad in elbow crutches.
8. Foot rests in wheel chair.
9. Asymmetrical leg length.
10. Swing through gait.

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[LL 0817] AUGUST 2017 **Sub. Code :2433**

BACHELOR IN PROSTHETICS & ORTHOTICS

THIRD YEAR

PAPER III – MOBILITY & REHABILITATION AIDS

Q.P. Code: 802433

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Special chair with tray with neat sketch.
2. Explain on various types of Wheelchair.
3. Gait training using Auxiliary Crutch and Elbow Crutch.

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

1. Different types of walking frame.
2. Computer based assistive technology for developmental aids.
3. Prescription criteria for molded seat.
4. Types of seating cushions available for wheelchair user.
5. Transfer techniques of wheelchair user.
6. Tricycle.
7. Installation of parallel bars with neat sketch.
8. Assistive devices for spinal cord injury patients.

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

1. Walking Stick.
2. Parapodium.
3. Developmental and Educational toys.
4. Low Level Cart.
5. Strapping in Molded Seat.
6. Importance of sitting upright.
7. Wheelchair Mobility Skills.
8. Transportation of motorized wheelchair.
9. Use of Parallel Bars.
10. Writing Aids.

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[LM 0218] FEBRUARY 2018 **Sub. Code: 2433**

BACHELOR IN PROSTHETICS & ORTHOTICS

THIRD YEAR

PAPER III – MOBILITY & REHABILITATION AIDS

Q.P. Code: 802433

Time: Three hours **Maximum : 100 Marks**

Answer All questions

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

1. Different types of walking aids with sketch.
2. Types of cushions used in wheelchair.
3. Assistive devices for SCI and Stroke Patients.

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

1. Developmental aids.
2. Fabrication of box seat.
3. Materials used for molded seat.
4. Assessment and measurement of wheelchair user.
5. Pressure relief techniques of wheelchair user.
6. Care and maintenance of wheelchair at home.
7. Components of motorized wheelchair.
8. Gait Training procedure for auxiliary crutch user.

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

1. Reciprocating walker.
2. Delayed milestones.
3. Prone board.
4. Molded seat.
5. Posture.
6. Appropriate wheelchair.
7. Caster wheels.
8. Anti-tipper and push rim.
9. Modified Two-Wheeler.
10. Adjustments in parallel bars.

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[LN 0818] AUGUST 2018 **Sub. Code: 2433**

BACHELOR IN PROSTHETICS & ORTHOTICS

THIRD YEAR

PAPER III – MOBILITY & REHABILITATION AIDS

Q.P. Code: 802433

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Molded seat.
2. Motorized wheelchair and its components with neat sketch.
3. Installation and fabrication of parallel bars with neat sketch.

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

1. Different types of crutches.
2. Standing frame.
3. Benefits of a wheelchair for persons with disability.
4. Wheelchair mobility skills.
5. Fabrication technique of foam pressure relief cushion.
6. Modified two-wheeler for mobility.
7. Measurement and Gait training procedure for elbow crutch user in paraplegia.
8. Assistive devices for stroke patients.

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

1. Caster wheels
2. Gutter Walker.
3. Normal Milestone.
4. Special Chair.
5. Wheelchair cushion.
6. Transfer Board.
7. Need for wheelchair modification.
8. Tricycle.
9. Gait Training of walker.
10. Eating and Drinking Aids.

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[LP 0819] AUGUST 2019 **Sub. Code: 2433**

BACHELOR IN PROSTHETICS & ORTHOTICS

THIRD YEAR

PAPER III – MOBILITY & REHABILITATION AIDS

Q.P. Code: 802433

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Types of walker and their attachments.
2. Biomechanics of various kinds of developmental aids.
3. Various developmental and education toys.

Write notes on: **(8 x 5 = 40)**

1. Mobility and walking aids.
2. Assistive Technology.
3. Tricycle.
4. Benefits of appropriate wheelchair to wheelchair user.
5. Pressure relief techniques for wheelchair user.
6. Motorized wheelchair.
7. Gait Training of Auxiliary Crutch and Elbow Crutch.
8. Self-help devices.

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

1. Quad Cane.
2. Para podium.
3. Low level cart.
4. Tilt and Recline in wheelchair.
5. Difference between pneumatic tire and solid tire in wheelchair.
6. Sports Wheelchair.
7. Foam Cushion.
8. Commode Chair.
9. Transportation of Wheelchair.
10. Button Fastener.

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[LH 0815] **AUGUST 2015** **Sub. Code: 2435**

BACHELOR IN PROTHETICS AND ORTHOTICS

THIRD YEAR

PAPER V – ORTHOTICS SCIENCE - III

Q.P. Code: 802435

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

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

1. Explain about finger driven flexor hinge splint fabrication procedure.
2. Write any there special assistive devices.
3. Write the influences of Functional Electrical Stimulator in upper extremity orthosis.

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

1. General principles of upper extremity orthosis.
2. Indication, functions and bio-mechanics of clavicular orthosis.
3. What is spring swivel thumb?
4. Flexion assist metacarpophalangeal (MCP) dynamic splint.
5. How to make T- bar for a feeder?
6. Assistive device – button hook.
7. What is Wilmer shoulder orthosis?
8. Fracture braces of upper limb.

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

1. What is C- bar?
2. What is Thomas suspension splint?
3. What is claw hand?
4. What is tenodesis splint?
5. What is thumb post?
6. Uses of static upper limb orthosis.
7. Bio-mechanics of orthosis.
8. What is plate guard?
9. What is tennis elbow?
10. What is ulnar dysplasia?

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[LJ 0816] AUGUST 2016 **Sub. Code :2455**

B.Sc. PROSTHETICS AND ORTHOTICS
(New Syllabus 2013-2014)

THIRD YEAR

PAPER V – ORTHOTICS SCIENCE – III

Q.P. Code: 802455

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. What are slings? Explain different types of sling with their prescription criteria.
2. Write biomechanical principles of hand splinting.
3. Describe Objective, fabrication and positioning of balance forearm orthosis.

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

1. Arches of Hand.
2. Anti deformity position.
3. Orthotic management for arthritic hand.
4. Deformities in burn.
5. Different types of pinch.
6. Different types of upper extremity orthosis with examples.
7. Indication and positioning of Airplane orthosis.
8. Volar wrist flexion control orthosis.

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

1. Dynamic wrist hand orthosis for median nerve injury.
2. Swan neck deformity and its orthotic management.
3. Hypothenar bar.
4. Opponens bar.
5. Tennis elbow splint.
6. Claw hand.
7. Prop.
8. Thumb post.
9. Passive prehension orthosis.
10. Thumb Spica.

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[LK 0217] FEBRUARY 2017 **Sub. Code :2435**

B.Sc. PROSTHETICS AND ORTHOTICS
THIRD YEAR
PAPER V – ORTHOTICS SCIENCE – III

Q.P. Code: 802435

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Describe in detail the types of hand grasp and prehension.
2. Describe briefly about Wrist Driven Flexor hinge splint.
3. Write down the different orthotic management of Claw hand deformity.

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

1. PAN cake splint.
2. Classify the upper extremity splinting.
3. Write a note on Long opponens hand splint.
4. Functional Hand Splint.
5. Intrinsic Minus Position.
6. Mallet finger and its management.
7. Carpal tunnel syndrome and its orthotic management.
8. Lateral Epicondylitis and its orthotic management.

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

1. Static WHO.
2. Boutonniere deformity.
3. Lumbrical Bar.
4. C-Bar.
5. L.P. Joint stabilizer.
6. Explain in brief intrinsic and extrinsic muscles of the hand.
7. Write down the functions of Outrigger.
8. Draw a leveled diagram showing different sections of a palmar piece.
9. Short opponens hand splint.
10. FES.

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[LL 0817] AUGUST 2017 **Sub. Code :2435**

BACHELOR IN PROSTHETICS & ORTHOTICS

THIRD YEAR

PAPER V – ORTHOTICS SCIENCE – III

Q.P. Code: 802435

Time: Three hours **Maximum : 100 Marks**

Answer All questions

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

1. Explain about finger driven flexor hinge splint fabrication procedure.
2. Write any there special assistive devices.
3. Write the influences of FES in upper extremity orthosis.

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

1. General principles of upper extremity orthosis.
2. Indication, functions and bio-mechanics of clavicularorthosis.
3. What is spring swivel thumb?
4. Flexion assist MCP dynamic splint.
5. How to make T- bar for a feeder?
6. Assistive device – button hook.
7. What is Wilmer shoulder orthosis?
8. Fracture braces of upper limb.

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

1. What is C- bar?
2. What is Thomas suspension splint?
3. What is claw hand?
4. What is tenodesis splint?
5. What is thumb post?
6. Uses of static upper limp orthosis.
7. Bio-mechanics of orthosis.
8. What is plate guard?
9. What is tennis elbow?
10. What is ulnar dysplasia?

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[LN 0818] AUGUST 2018 **Sub. Code: 2435**

B.Sc. PROSTHETICS & ORTHOTICS

THIRD YEAR

PAPER V – ORTHOTICS SCIENCE – III

Q.P. Code: 802435

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Categories of upper limb orthosis and give two examples of each category.
2. What is feeder? How to install a ball bearing supportive type feeder?
3. How to fit a locking joint functional arm brace with elastic flexion assist?

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

1. Wrist mobilization orthosis.
2. Indication and functions of arm sling or shoulder orthosis.
3. S.E.W.O (shoulder abduction) indication and functions.
4. Elbow wrist forearm orthosis (sugar- tong).
5. Assistive device – button hook.
6. Dynamic MCP extension assists orthosis.
7. Short opponens splints.
8. P.S.E.W.H.O. functions with diagram.

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

1. Tenodesis orthosis indication.
2. What is swan neck ring?
3. MCP mobilization orthosis function.
4. What is ulnar tunnel syndrome?
5. What is schenck splint?
6. Finger orthosis indications.
7. What is functional position?
8. What is tennis elbow?
9. Advantages of functional orthosis.
10. What is smith fracture?

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[LP 0819] AUGUST 2019 **Sub. Code: 2435**

B.Sc. PROSTHETICS & ORTHOTICS

THIRD YEAR

PAPER V – ORTHOTICS SCIENCE – III

Q.P. Code: 802435

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Explain all attachments of long opponents splint.
2. Write any three special assistive devices.
3. Write about: (a) mobile arm support (b) functional elbow orthosis.

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

1. Static hand orthosis with butterfly writing clip.
2. What is Wilmer shoulder orthosis?
3. Shoulder Elbow Wrist orthosis indication and functions?
4. Thumb opponents splint.
5. Functional position resting hand splint.
6. Carpal tunnel syndrome and its orthotic management.
7. General principles of upper extremity orthosis.
8. Indication and functions of hand orthosis?

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

1. What is palmar pocket?
2. What is golfer's elbow?
3. Knuckle bender.
4. Cock up splint.
5. What is brachial plexus injury?
6. What is C- bar?
7. Aeroplane splint.
8. What is smith fracture?
9. What is tenodesis splint?
10. What is the role of FES in upper limb orthosis?

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[LH 0815] **AUGUST 2015** **Sub. Code: 2432**

BACHELOR IN PROSTHETICS & ORTHOTICS (BPO)
THIRD YEAR
PAPER II – P AND O WORKSHOP MANAGEMENT

Q.P. Code: 802432

Time: Three Hours **Maximum : 100 Marks**

Answer all Questions

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

1. What is integrated materials management approach? What is the role of MIS in successful integration of systems in an organisation in performing materials management function?
2. What are the features of a good organization?
3. Explain with examples ways of creating, filing and maintaining patient information system in a Prosthetics and Orthotics workshop.

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

1. Explain the receiving techniques in inventory management.
2. What is the need and role of an audit system in inventory management?
3. Explain VED analysis.
4. Write short notes on the fundamentals of effective supervision.
5. Explain organisation chart.
6. Write short notes on human resource management.
7. What are the objectives of costing?
8. Discuss the types of industrial hazards.

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

1. Goods received note.
2. Dead stock.
3. EOQ.
4. Opportunity cost.
5. State the meaning of organisation manuals.
6. Principle of order.
7. Euthanasia.
8. Accreditation.
9. Industrial hazard.
10. Cost control.

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[LJ 0816] AUGUST 2016 **Sub. Code :2452**

B.Sc. PROSTHETICS AND ORTHOTICS
(New Syllabus 2013-2014)

THIRD YEAR
PAPER II – P AND O WORKSHOP MANAGEMENT

Q.P. Code: 802452

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Draw a diagram of modern P and O workshop and show administrative, patient, workshop and staff areas.
2. What are the features of organization?
3. Explain different aspects of construction.

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

1. Fundamentals of supervision.
2. Human resource development.
3. Safety measures.
4. Causes of industrial accidents.
5. Mass production.
6. Manpower planning.
7. Auditing of P and O workshop.
8. Quality control.

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

1. Wages and incentives.
2. Chemical hazards.
3. Store keeping.
4. Personnel management.
5. Work sheet.
6. Inventory control.
7. First aid.
8. Opportunity cost.
9. Staff welfare.
10. Computer usage in stores.

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[LK 0217] FEBRUARY 2017 **Sub. Code :2432**

B.Sc. PROSTHETICS AND ORTHOTICS
THIRD YEAR
PAPER II – P and O WORKSHOP MANAGEMENT

Q.P. Code: 802432

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Discuss the uses of computer for effective P and O store management.
2. Explain Quality control. Discuss the uses of quality assurance system for P and O Industry.
3. Discuss code of ethics for P and O professionals.

Write notes on: **(8 x 5 = 40)**

1. What is Material Safety Data sheet (MSDS)?
2. Outline various documentations and records necessary for a P and O service delivery.
3. Explain Job production with their advantages and disadvantages.
4. Explain briefly Bin Card and material issue requisition.
5. List the functions of inventory control.
6. Define accident and mention the causes of accident in a P and O workshop.
7. Write a note on Pareto Chart.
8. What are the methods of purchasing?

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

1. Time sheet.
2. Work sheet.
3. Customer service.
4. Wages.
5. Write any three demerits of line organization.
6. What is balance sheet approach of compensation?
7. What is codification?
8. Why is feedback necessary in a control system?
9. What is the purpose of materials management?
10. Define costing and discuss its objectives.

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[LL 0817] **AUGUST 2017** **Sub. Code :2432**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER II – P & O WORKSHOP MANAGEMENT

Q.P. Code: 802432

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. What is organization? Explain.
2. Lay out procedure in establishing P and O workshop.
3. Human resource management.

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

1. Industrial accidents.
2. Material management.
3. Store keeping.
4. Work sheet and time sheet.
5. Inventory control.
6. Fundamentals of supervision.
7. Use of computer in store keeping.
8. Maintaining of patients records.

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

1. Revenue expenditure.
2. Cost control.
3. Purchase of materials.
4. Mass production.
5. Accreditation.
6. Quality control.
7. First aid.
8. Work distribution.
9. Architectural barriers.
10. Opportunity cost.

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[LM 0218] FEBRUARY 2018 **Sub. Code: 2432**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER II – P & O WORKSHOP MANAGEMENT

Q.P. Code: 802432

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. What is Industrial accident? Write down different causes and its prevention.
2. Describe various principles and function of Management.
3. What is organization? Describe various type of organization structure.

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

1. Procedure for costing a product.
2. Various types of staff welfare Measures.
3. Differentiate Job rotation and Job enrichment.
4. Qualities of supervisor.
5. Procedures for selection of a candidate for the job.
6. What are the duties and responsibilities of storekeeper?
7. Budget and budgetary control.
8. Different type of Production system.

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

1. What is BIN Card?
2. Define Span of Control.
3. What is ISO and its use?
4. Write down three important duties of Purchase officer.
5. What is Economic Order Quantity?
6. Write down about GST.
7. What is First Aid Box?
8. Define Inventory Carrying Cost.
9. What is ABC analysis used for material management?
10. Define Organization Chart.

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[LN 0818] AUGUST 2018 **Sub. Code: 2432**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER II – P & O WORKSHOP MANAGEMENT

Q.P. Code: 802432

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Describe layout and various types of layout.
2. Describe code of ethics for prosthetic and orthotic professional.
3. Define organization and types of organization.

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

1. Layout of P and O Workshop.
2. Economic order quantity.
3. Quality and quality control.
4. Time sheet.
5. Discipline.
6. Principle of good organization.
7. Difference between management and administration.
8. Describe the function of management.

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

1. Planning.
2. VED Analysis.
3. First Aid.
4. Statistical Quality Control (SOQ) with example.
5. Inventory control.
6. Prime cost.
7. Leadership style.
8. Traits of leadership.
9. What are the methods of purchasing?
10. Describe the various steps of hospital waste management.

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[LP 0819] AUGUST 2019 **Sub. Code: 2432**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER II – P & O WORKSHOP MANAGEMENT

Q.P. Code: 802432

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Implementation of a safe and secure storage system.
2. Detail explanation of cost sheet and its various stages. Give suitable examples.
3. What is meant by medical negligence? Explain the various types of negligence with few examples.

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

1. Euthanasia.
2. Rate of Contract.
3. Qualities of a good Supervisor.
4. Types of costing.
5. Methodologies to conduct Audit.
6. What are the basic requirements for consent form?
7. Inventory carrying cost.
8. How to make organization manuals effective?

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

1. Types of customers.
2. Batch costing
3. Define “Organization”.
4. Letter of credit.
5. FIFO.
6. What is meant by - “staffing”?
7. Define Quality.
8. Define - “Human Resource Management”.
9. Dead stock.
10. Tender process.

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[LH 0815] **AUGUST 2015** **Sub. Code: 2434**

BACHELOR IN PROSTHETICS & ORTHOTICS (BPO)
THIRD YEAR
PAPER IV – PROSTHETICS SCIENCE - III

Q.P. Code: 802434

Time: Three hours **Maximum : 100 Marks**

Answer all Questions

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

1. Explain about Mechanical Elbow Joint.
2. Bionic Arm.
3. Prosthetic Management for Elbow Disarticulation.

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. Shoulder disarticulation Socket Trimlines.
2. Hinges for Elbow Disarticulation Prosthesis.
3. Control Cable System.
4. Wrist Disarticulation.
5. Types of Hinges.
6. Cosmetic Finger Prosthesis.
7. Trans Humeral Prosthesis Socket Suspension.
8. Material used for making Sockets.
9. Trans Humeral Prescription criteria.
10. Trans Radial Measurement Procedures.

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[LJ 0816] AUGUST 2016 **Sub. Code :2454**

B.Sc. PROSTHETICS AND ORTHOTICS
(New Syllabus 2013-2014)

THIRD YEAR

PAPER IV – PROSTHETICS SCIENCE - III

Q.P. Code: 802454

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Trans humeral prosthesis parts and briefly explains about functions of each part.
2. Explain about Prosthetics elbow joints and functions of each joint.
3. Functional shoulder disarticulation prosthesis and types of shoulder joints.

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

1. What is heavy duty Trans radial harness system?
2. Explain about friction wrist units.
3. What is outside-locking hinges and inside –locking elbow units?
4. Explain about general concept of myoelectric prosthesis.
5. What is the Difference between hand and hook?
6. Check out procedure of Trans humeral prosthesis.
7. Explain about bio-feedback.
8. Write about Functional prosthesis for partial hand amputation.

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

1. What is grasp pattern?
2. Write the parts of the trans humeral 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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[LL 0817] AUGUST 2017 **Sub. Code :2434**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER IV – PROSTHETICS SCIENCE - III

Q.P. Code: 802434

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

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

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

1. Describe congenital deficiency.
2. Explain about socket design of partial hand prosthesis.
3. Explain Bilateral below elbow harness system.
4. Explain about prosthetic options for upper limb amputees.
5. Explain about elbow hinges.
6. Types of wrist units.
7. Explain about split socket prosthesis.
8. Explain transradial TRAC socket.

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

1. Define figure of 9 harness?
2. What is Inverted Y strap?
3. Describe about activity specific prosthesis.
4. Indication and contra indication for myoelectric prosthesis.
5. What is body powered and externally powered prosthesis?
6. Trim lines of Trans radial socket.
7. Nudge control unit.
8. Define krukenberg amputation.
9. What is Muenster socket?
10. Difference between internal and external elbow unit.

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[LM 0218] FEBRUARY 2018 **Sub. Code: 2434**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER IV – PROSTHETICS SCIENCE - III

Q.P. Code: 802434

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Trans humeral prosthesis parts and briefly explains about functions of each part.
2. Explain about Prosthetics elbow joints and functions of each joint.
3. Functional shoulder disarticulation prosthesis and types of shoulder joints.

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

1. What is heavy duty Trans radial harness system?
2. Explain about friction wrist units.
3. What is outside-locking hinges and inside –locking elbow units?
4. Explain about general concept of myoelectric prosthesis.
5. What is the Difference between hand and hook?
6. Check out procedure of Trans humeral prosthesis.
7. Explain about bio-feedback.
8. Write about Functional prosthesis for partial hand amputation.

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

1. What is grasp pattern?
2. Write the parts of the trans humeral 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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[LN 0818] AUGUST 2018 **Sub. Code: 2434**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER IV – PROSTHETICS SCIENCE - III

Q.P. Code: 802434

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Explain about upper limb levels of amputation.
2. Shoulder Disarticulation Prosthesis Check out Procedures.
3. Types of Elbow Units.

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

1. Types of prosthetic terminal device.
2. Cosmetic hand gloves and fingers.
3. Prosthetic Management for Elbow Disarticulation Prosthesis.
4. Wrist Disarticulation amputation patient assessment.
5. Biomechanics of Trans Radial Prosthesis.
6. Trans Radial Prosthesis checkout procedure.
7. Types of shoulder joints.
8. Trans Humeral Prosthesis Components.

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

1. Types of wrist units.
2. Control cable system.
3. Myoelectric Prosthesis.
4. Trans Humeral measurement technique.
5. Biomechanics of Trans Humeral Prosthesis.
6. Prosthetic Management for Partial Hand.
7. Fabrication procedure for double wall socket.
8. Trans humeral amputation stump assessment procedure.
9. Trans Radial socket trim lines.
10. Functional Electrical Stimulation (FES).

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[LP 0819] AUGUST 2019 **Sub. Code: 2434**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER IV – PROSTHETICS SCIENCE - III

Q.P. Code: 802434

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Prosthetic Management for Partial hand prosthesis.
2. Biomechanics of Trans Radial Prosthesis.
3. Explain about Functional Electrical Stimulation (FES).

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

1. Trans Radial Prosthesis checkout procedure.
2. Explain about myoelectric prosthesis.
3. Explain about bio-feedback.
4. What is outside-locking hinges and inside –locking elbow units?
5. Explain about friction wrist units?
6. Explain about split socket prosthesis.
7. Write about Hosmer, Dorrance functional hands.
8. What is heavy duty Trans radial harness system?

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

1. What is grasp pattern?
2. What is Muenster socket?
3. What is voluntary opening and closing?
4. What is Nudge control unit?
5. Define figure of 9 harness?
6. What is single axis hinge and polycentric hinge?
7. Types of prosthetic terminal device.
8. What is the Difference between internal and external elbow unit?
9. Measurement techniques for shoulder Disarticulation Prosthesis.
10. Definition of prehension.

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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.

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

[AHS 0222] **FEBRUARY 2022** **Sub. Code: 2475**
(AUGUST 2021 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. 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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[LH 0815] **AUGUST 2015** **Sub. Code: 2436**

BACHELOR IN PROTHETICS AND ORTHOTICS

THIRD YEAR

PAPER VI – RESEARCH METHODOLOGY/PROJECT DEVELOPMENT

Q.P. Code: 802436

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

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

1. Discuss various methods of observational study.
2. Describe various sources of demographic data.
3. Discuss diagrammatic presentation of data.

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

1. Normal distribution.
2. Chi-square test.
3. Parametric test.
4. Advantages of cohort study design.
5. Graphical representation of data.
6. Measurement in research.
7. Describe methods of data collection.
8. Cross sectional study.

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

1. Prevalence and incidence.
2. Differentiate discrete and continuous variables.
3. Define survey.
4. Differentiate statistics and biostatistics.
5. Disadvantages of cohort study.
6. Define Randomization.
7. Qualitative study.
8. P-value.
9. What is primary data?
10. Define mean, median, mode.

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[LI 0216] FEBRUARY 2016 **Sub. Code: 2436**

B.Sc. PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER VI – RESEARCH METHODOLOGY/PROJECT DEVELOPMENT

Q.P. Code: 802436

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

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

1. Elaborate Experimental study design.
2. What is sampling? Write about the types of sampling techniques and criteria for selecting sampling procedure.
3. Explain various parametric and non-parametric tests?

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

1. Histogram Vs bar diagram.
2. Chi-square test.
3. ANOVA.
4. Advantages of cross sectional study design.
5. Types of Randomization.
6. What is hypothesis? Explain null and alternate hypothesis.
7. Test of significance.
8. What is hypothesis? Write the basic concepts related to testing of hypothesis.

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

1. Differentiate biostatistics and statistics.
2. Differentiate discrete and continuous variables.
3. Advantages of sampling.
4. Meta analysis.
5. Double blinding.
6. Define Randomization.
7. Differentiate standard deviation and standard error
8. What is secondary data?
9. Advantages of Cluster sampling.
10. Reliability Vs Validity.

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[LJ 0816] AUGUST 2016 **Sub. Code :2456**

B.Sc. PROSTHETICS AND ORTHOTICS
(New Syllabus 2013-2014)

THIRD YEAR

PAPER VI – RESEARCH METHODOLOGY / PROJECT DEVELOPMENT

Q.P. Code: 802456

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Define variables. Explain in detail about the types of variables.
2. Describe various method of data collection.
3. How to you define research problem? Write in detail about necessity of defining research problems.

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

1. Uses of bio-statistics.
2. Types of survey.
3. Distinguish Cumulative frequency and relative frequency.
4. Differentiate case control and cohort study.
5. Classification of data.
6. Bar diagram.
7. Frequency curve.
8. Components of research protocol.

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

1. What is primary data?
2. Define hypothesis with example.
3. Qualitative variables.
4. Define sampling.
5. ANOVA.
6. Statistical Table.
7. Define Frequency polygon.
8. p-value.
9. Line diagram.
10. Define mean, median, mode.

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[LK 0217] FEBRUARY 2017 **Sub. Code: 2436**

B.Sc. PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER VI – RESEARCH METHODOLOGY / PROJECT DEVELOPMENT

Q.P. Code: 802436

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. What is analysis of data? Explain different types of analysis in research.
2. Define Research. Describe in detail about Experimental Research Design.
3. What is sampling? Enumerate various method of sampling technique.

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

1. Histogram.
2. Statistical table.
3. Explain and illustrate the procedure of selecting a random sample.
4. Case control study.
5. Pictogram.
6. Analytical study.
7. Research hypothesis.
8. Types of Error.

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

1. What is Secondary data?
2. Descriptive study.
3. Cluster sampling.
4. Measurement and scaling technique.
5. Cartogram.
6. Define Objectives of research.
7. Why do we need research design?
8. Classification of data.
9. Advantages of cross sectional study.
10. Define confidence interval.

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[LM 0218] FEBRUARY 2018 **Sub. Code: 2436**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER VI – RESEARCH METHODOLOGY / PROJECT DEVELOPMENT

Q.P. Code: 802436

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. What is hypothesis? Mention its types. How do you test the hypothesis?
2. Elaborate on procedures involved in limb orthotics project development.
3. Elaborate case study method and its uses.

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

1. What are the elements of Informed Consent?
2. Define reliability. What is Intra rater and Inter rater reliability?
3. What is the scope of statistics in limb Prosthetics research? Provide suitable examples.
4. Write Characteristics of normal distribution.
5. Define Validity. Writes its types. Provide an example of a situation from clinical Orthotics where construct validity methods might be applied.
6. How is the Null Hypothesis stated? Explain with suitable examples from limb prosthetics.
7. What are the points to be considered while identifying and selecting a problem for research?
8. How do you compute mean for ungrouped data?

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

1. What do you understand by level of significance?
2. Explain Snowball sampling. Give an example.
3. Which diagram will help in calculating median and quartiles?
4. How will you interpret correlation coefficient?
5. How will you choose class interval?
6. How will you draw Frequency Curve?
7. What is Skewness? Define Kurtosis.
8. What is coefficient of Variation?
9. Define Bias. Mention various biases during a research work.
10. What are the contents of a research proposal?

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[LN 0818] AUGUST 2018 **Sub. Code: 2436**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER VI – RESEARCH METHODOLOGY / PROJECT DEVELOPMENT

Q.P. Code: 802436

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Define Research Variable. What is meant by Independent and Dependent Variable? Design a research problem from limb prosthetics and identify independent and dependent variable.
2. Elaborate on various research designs applicable in Orthotic/Prosthetic projects.
3. Explain the meaning and utility of percentile. Elaborate the ways and means for the interpretation of a computed co-efficient of correlation.

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

1. Distinguish between 'Ratio Scale' and 'Interval Scale'. In which situation Likert scale is used?
2. Discuss, in brief, the need for stratified random sampling. Is the mean of the stratified random sample unbiased estimator of the population mean? Justify your answer.
3. Write short notes on (a) frequency polygon (b) histogram.
4. Explain in brief :- Type I and Type II errors.
5. What is PICO model? Formulate a research question using this model.
6. Explain Chi square test. Mention its uses.
7. Write a note on Inductive logic in Orthotic/Prosthetic studies.
8. When there are more than two group with continuous outcome measure, explain the procedure of Test of Hypothesis?

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

1. What is positive Correlation and Negative Correlation?
2. What is scatter diagram?
3. What are requisites of good Average?
4. Define Tabulation in collection of data.
5. How will you interpret correlation coefficient?
6. What do you mean by Operational Definition? Give a suitable example.
7. What is normative data? Give examples.
8. What is pilot testing? Write its advantages.
9. What do you mean by Scientific Enquiry? Give examples from clinical orthotics.
10. What is literature review and why it is necessary?

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[LP 0819] AUGUST 2019 **Sub. Code: 2436**

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR

PAPER VI – RESEARCH METHODOLOGY / PROJECT DEVELOPMENT

Q.P. Code: 802436

Time: Three Hours **Maximum : 100 Marks**

Answer All questions

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

1. Elaborate on various research designs applicable in Orthotic/Prosthetic projects?
2. Explain various parametric and non parametric tests.
3. What is Sampling? Enumerate various method of sampling technique.

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

1. Normal distribution.
2. Cross sectional study.
3. Calculation of Mean for Ungrouped data.
4. Explain in brief Type I and Type II error.
5. Histogram Vs bar diagram.
6. What is hypothesis? Explain null and alternate hypothesis.
7. Case control Study.
8. What are the elements of Informed Consent?

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

1. Interpretation of correlation coefficient.
2. Cluster sampling.
3. Define confidence interval.
4. What is scatter diagram?
5. What is literature review and why is it necessary?
6. Define randomization.
7. Define Mean, Median and Mode.
8. Prevalence and incidence.
9. What are the contents of research proposal?
10. Disadvantage of cohort study.

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

[AHS 0321] **MARCH 2021** **Sub. Code: 2474**

(AUGUST 2020 EXAM SESSION)

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR (Regulation 2017-2018)

PAPER IV – RESEARCH METHODOLOGY AND BIO STATISTICS

Q.P. Code : 802474

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

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

1. Data collection form experiments and Surveys.
2. Testing of Hypothesis.
3. Measurements and scaling techniques: Measurement scales and sources of error in measurement.

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

1. Need for Sampling.
2. Types of analysis of data.
3. Criteria for selecting sampling procedure.
4. Definition of Statistics/Biostatistics.
5. Tabular presentation of data.
6. Construction of Frequency distribution.
7. Histogram.
8. Types of Research.

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

1. Meaning of research.
2. Statement of research.
3. Method of collecting primary data.
4. Quantitative variable with example.
5. Application of Biostatistics.
6. Ogives or Cumulative frequency curves.
7. Bar diagrams and Pie diagrams.
8. Necessity of defining the problem
9. Types of sampling.
10. Exclusive and inclusive method of classification of Data.

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