

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

**[AHS 0423]**

**APRIL 2023**

**Sub. Code: 2457**

**BACHELOR IN PROSTHETICS AND ORTHOTICS  
FIRST YEAR (Regulation 2017-2018 onwards)  
PAPER VII – PROSTHETIC SCIENCE I  
Q.P. Code: 802457**

**Time: Three Hours**

**Answer All questions**

**Maximum : 100 Marks**

**I. Elaborate on : (3X10=30)**

1. Draw a neat labeled diagram of SACH Foot and describe its mechanism of action.
2. Draw a neat labeled Antero-posterior (AP) and Medio-lateral (ML) diagrammatic view of Trans-tibial Ideal residual limb. Mention the Pressure Tolerant and Intolerant area on the Residuum.
3. Describe with neat labeled sketch different types of Trans-tibial socket designs.

**II. Write Notes on : (8X5=40)**

1. Brief on Historical development in Lower Extremity Prosthetics in India.
2. Describe Biomechanics of Partial foot Prosthesis.
3. Classify various types of Prosthetic Feet.
4. Brief on various types of Symes Prosthesis.
5. Different types of suspension mechanism for transtibial Prostheses.
6. Brief on various types of materials used in fabrication of partial foot Prosthesis.
7. What would be the possible biomechanical effects of inappropriately designed transtibial prostheses socket?
8. Consider a young active trans-tibial amputee. During the alignment process the patient complains that the knee is being pushed into excessive extension during the mid-stance. What alignment change should be performed?

**III. Short Answers on : (10X3=30)**

1. What are the gait deviations observed during swing phase in Transtibial Prosthesis user?
2. Explain Socket/stump interface in below knee amputees.
3. Suggest Prosthetic design for Chopart amputation.
4. Explain Pressure distribution in Total Surface Bearing Transtibial socket.
5. Write Trans-tibial Prosthetic Prescription principles.
6. Enumerate Engineering materials used in Trans-tibial Prosthesis.
7. Draw a neat labeled sketch of Jaipur Limb design.
8. State the Benefits of Open ended socket.
9. What are the Causes of Lateral trunk bending in transtibial gait?
10. What do you mean by Good transtibial prosthetic socket fit?

\*\*\*\*\*