



Advertisement No. IITH/2023/NF/15 dated 22.10.2023

Post Number	Post Name
15.16	Junior Technician - Mechanical and Aerospace Engineering

Selection process consists of Skill Test and Written Test

Syllabus for Written and / or Skill Test

1. Junior Technician –Mechanical and Aerospace Engineering (Biomechanics/Biophysics/Biomedical)

Biomechanics Basic maths: Differentiation, integration, differential equations, matrices, analytical geometry Bio-fabrication/3D Bioprinting
Microfabrication – materials - thin film deposition and patterning techniques
Cell culturing techniques, splitting, etc; Cell freezing and thawing; Identification of cells in blood smear; Cell scaffolding. Separation and concentration of Cells on Chip using Acoustic, Magnetic, and Optical fields
Animal Physiology mammalian cell culture and molecular biology
Tissue engineering: fundamentals and current status; Stem cells: embryonic and mesenchymal stem cells; cell differentiation; Extra-cellular matrix components and their regulation of cell behavior; In vitro and in vivo testing of biomaterials. Bioreactor; Cell migration; Growth factors;
Different approaches for angiogenesis and its importance.
Biomaterials – materials - thin film deposition and patterning techniques basic knowledge in materials science to understand the properties of different materials and their use as biomaterials. Gain knowledge on the advanced biomaterials in health care and a fundamental understanding of biological response to biomaterials.

2. Junior Technician –Mechanical and Aerospace Engineering (Mechanical)

"Syllabus for various trades will be based on the syllabus of the curriculum of "The Craftsmen Training Scheme (CTS)", Central Staff Training and Research Institute, Directorate General of Training, Ministry of Skill Development and Entrepreneurship. The detailed syllabus can be accessed through the following link: https://dgt.gov.in/cts_details In addition to the above, the following will also be

included Differentiation, integration, differential equations, matrices, analytical geometry Engineering and machine drawing Stress, strain, axial loading of structures, material characterization, beam bending, shaft torsion Thermodynamics, heat engine cycles Design of bolted and welded joints Manufacturing process, machine tools, Jigs and fixtures, metrology Fluid mechanics transducers for pressure, distance, velocity, force, temperature and strain measurement; CNC coding "

3. Junior Technician –Mechanical and Aerospace Engineering (Aero)

" Basic maths: Differentiation, integration, differential equations, matrices, analytical geometry Engineering and machine drawing Stress, strain, and material behavior Basics in thermodynamics, fluid dynamics, and compressible flows Basics in aircraft and rocket propulsion, flight dynamics, and control Elements of aeromodelling and drone design Manufacturing process, machine tools, machining process, jigs and fixtures Mechanical measurements and instrumentation".

Note: The syllabus topics mentioned above are for illustrative purposes only.
