RECRUITMENT CELL
NATIONAL INSTITUTE OF TECHNOLOGY TIRUCHIRAPPALLI – 620 015.

Syllabus for Skill and Main tests for the post of Technician and Senior Technician

Group II – Non Circuit Branches

Building Construction and Materials: Foundations - masonry construction - stone & brick masonry - composite walls and cavity walls - arch construction – roof trusses, roof covering- Basics tools and equipment for the building construction.

Economics and Project Management: Principles of process economics and cost estimation including depreciation and total annualized cost, cost indices, rate of return, payback period

Project management: Scheduling techniques – Gantt chart, CPM, PERT and GERT Engineering

Mechanics: Laws of Forces, Systems of forces. Centroids and moment of inertia. Moment, Friction, Centre of Gravity and Simple Machines.

Engineering Materials: classification of materials, properties of materials, Metals and Alloys, Heat

Treatment, advanced materials: carbon fiber composites, ceramics.

Basics of costing, Metal forming, Joining of materials and powder processing.

Process Heat Transfer: Conduction, Convection and Radiation, Principles of Heat Flow in Fluids and Heat Exchangers, Evaporation and Insulation.

Mass Transfer: Principles of Mass Transfer, Fundamental of Distillation, Techniques of Distillation,

Absorption, Solvent Extraction, Humidification, Drying, Crystallisation, Leaching, Absorption.

Chemical Reaction Engineering (Theories of reaction rates; kinetics of homogeneous reactions, interpretation of kinetic data, single and multiple reactions in ideal reactors, non-ideal reactors)

Fluid Mechanics and Hydraulics: Properties of fluids, fluid statics; Continuity, momentum and energy equations and their applications; Potential flow, Laminar and turbulent flow; Flow in pipes, Concept of lift and drag. Types of pumps and turbines.

Forces on immersed bodies; Flow measurement in channels and pipes; Dimensional analysis and hydraulic similitude; Channel Hydraulics Laws of thermodynamics: First law – energy conservation, Second law - entropy; Enthalpy, Gibbs and Helmholtz free energy; Maxwell’s relations; Chemical potential