

FOUNDRY SHOP

Sec – A Common Syllabus

Familiarity with the Use of Various Tools Used in Mechanical Engineering Workshop:

Marking and Measuring : Steel rule, surface gauge, marking block, protractor, try-square, scriber, punches, divider and callipers, surface plate, V. block, gauges (screw, pitch, radius, feeler), Vernier calipers, Micrometer Vernier height and depth gauge, use of dial gauge.

Holding Tools: Vices (Bench, leg and hand vice), clamps, tongs, pliers.

Cutting Tools : Hack saw (Fixed and adjustable frame), chisels-flat, cross cut, diamond, round nose.

Files: According to section-Knife edge, Flat, Triangular, Round, Square, Half round.

According to grade-Rough, Bastard, Second cut, Smooth and Dead Smooth.

Drills and Allied Tools : Parallel and taper shank twist drill.

Thread Cutting Tools: Taps and Dies.

Miscellaneous Tools: Wrenches, Keys, Spanners, Pliers, Screw drivers, their specification and many others which have not been named for use in various shop. They should be shown physically to each student for familiarity.

Sec – B Foundry work: Elementary idea of patterns, Types of moulds, sand and green sand moulds and moulding tools and equipment used in green sand moulding.

Sec – C Pattern Making

Types of pattern pattern material, Pattern allowances ,Pattern codes as per B.I.S., introduction to cores, core boxes and core materials, core making procedure, Core prints, Positioning of cores

Moulding and Casting

Sec – D Moulding Sand

Properties of moulding sand. Their impact and control of properties viz. permeability, refractoriness, Adhesiveness, cohesiveness, strength, flow ability, collapsibility, Various types of moulding sand, Testing of moulding sand. Safety precautions in foundry.

Sec – E Mould Making

Types of moulds, Step involved in making a mould. Molding boxes. hand tools used for mould making, Molding processes: Bench molding. floor molding. Pit molding and machine molding, Molding machines squeeze machine. Jolt squeeze machine and sand slinger.

Sec – F Casting Processes

Charging a furnace, melting and pouring both ferrous and non ferrous metals, cleaning of casting, Principle, Working and applications of Die casting: hot chamber and cold chamber, Investment and lost wax process, centrifugal casting.

Sec – G Gating and Riser System

Elements of gating system, pouring basin, sprue, runner, gates, Types of risers, location of risers, Directional solidification

Sec – H Melting Furnaces

Construction and working of pit furnace, Cupola furnace, crucible furnace tilting type, Electric furnace.

Sec – I Casting Defects

Different types of casting defects, Testing of defects: radiography, magnetic particle inspection and ultrasonic inspection.