

SYLLABUS FOR THE TRADE OF TURNER

First Semester
(Semester Code no. TUR - 01)

Duration : Six Month

Week No.	Trade Practical	Trade Theory
1.	<p>Importance of trade training, List of tools & Machinery used in the trade. Health & Safety: Introduction to safety equipments and their uses. Introduction of first aid, operation of Electrical mains.</p> <p>Occupational Safety & Health Importance of housekeeping & good shop floor practices. Health, Safety and Environment guidelines, legislations & regulations as applicable. Disposal procedure of waste materials like cotton waste, metal chips/burrs etc. Basic safety introduction, Personal protective Equipments(PPE):- Basic injury prevention, Basic first aid, Hazard identification and avoidance, safety signs for Danger, Warning, caution & personal safety message. Preventive measures for electrical accidents & steps to be taken in such accidents. Use of Fire extinguishers.</p>	<p>Importance of safety and general precautions observed in the in the industry/shop floor. All necessary guidance to be provided to the new comers to become familiar with the working of Industrial Training Institute system including stores procedures. Soft Skills: its importance and Job area after completion of training. Introduction of First aid. Operation of electrical mains. Introduction of PPEs. Introduction to 5S concept & its application. Response to emergencies eg; power failure, fire, and system failure.</p>
2.	<p>Identification of tools & equipments as per desired specifications for marking & sawing (Hand tools , Fitting tools & Measuring tools) Selection of material as per application Visual inspection of raw material for rusting, scaling, corrosion etc., Marking out lines, gripping suitably in vice jaws, hack sawing to given dimensions, sawing different types of metals of different sections. Practice on hammering, marking out, chipping, chisel grinding</p>	<p>Measurement, line standard and end standard, steel rule-different types, graduation and limitation. Hammer and chisel-materials, types and uses. Prick punch and scriber.</p>
3 & 4	<p>Filing practice on plain surfaces, right angle by filing. Use of calipers and scale measurement.</p>	<p>Vice – types and uses, Files-different types of uses, cut, grade, shape, materials etc. Try square-different types, parts, material used etc. Calipers-types and uses (firm joint).</p>

5.	Filing at right angle, marking & hack sawing.	Vee – block, scribing block, straight edge and its uses. Hacksaw-their types & uses.
6	Marking operation on flat & round job. Drilling operation.	Center punch- materials, construction & material uses. Drill machine-different parts. Hacksaw blades- sizes , different Parts. Hacksaw blades-sizes, different pitch for different materials. Nomenclature of drill.
7.	Threading with the help of taps and dies.	Surface plate its necessity and use. Tap, - different types (Taper 2 nd and bottoming) care while tapping. Dies different types and uses. Calculation involved to find Out drill size (Metric and Inch).
8.	Getting to know the lathe with its main components, lever positions and various lubrication points as well.	Definition of machine & machine tool and its classification. History and gradual development of lathe.
9.	Mounting of chuck on machine spindle and unloading in various system – faceplate, 3-jaw chuck, 4-jaw chuck.	Classification of lathe in Function and construction of different parts of Lathe.
10 & 11	Turning of round stock on 4-jaw independent chuck. Use of 3-jaw self centering chuck as well.	Types of lathe drivers, merit and demerit. Description in details-head stock-cone pulley type- all geared type-construction & function. Tumbler gear set. Reducing speed-necessary & uses. Back Gear Unit –its construction use.
12	Grinding of R.H. and L.H., side cutting tools, checking of angles with tools angle gauge / bevel protractor.	Lathe cutting tool-different types, shapes and different angles (clearances and rake), specification of lathe tools
13 & 14	Facing operation to correct length, center drilling operation,. Grinding of “V” tools for threading of Metric 60 degree threads with guage.	Combination drill- appropriate selection of size from chart of combination drill. Drill, chuck- its uses.
15 & 16	Parallel turning, step turning, practice-measurement with scale and outside caliper to 0.5 mm. accuracy. Measurement with vernier caliper ± 0.5	Vernier caliper-its construction, principle graduation and reading, least count etc. Digital vernier caliper. Outside micrometer –different parts,

	mm accuracy.	principle, graduation, reading, construction. Digital micrometer. Cutting speed, feed depth of cut, calculation involved-speed feed R.P.M. etc. recommended for different materials.
17	Step turning practice within ± 0.5 mm with SQ, shoulder, U/cut on OD. Drilling on Lathe-step drilling, drill grinding practice.	Different types of micrometer, Outside micrometer. Vernier scale graduation and reading. Sources of error with micrometer & how to avoid them. Use of digital measuring instruments. Lathe accessories, chuck independent, self centering, collet, magnetic etc., its function, construction and uses.
18 & 19	Boring practice-Plain & step, internal recessing. Reaming in lathe using solid and adjustable reamer.	Drills-different parts, types, size etc., different cutting angles, cutting speed for different material. Boring tool. Counter - sinking and Counter boring. Letter and number drill, core drill etc. Reamers-types and uses. Lubricant and coolant-types, necessity, system of distribution, selection of coolant for different material: Handling and care.
20	Checking alignment of lathe centers. Mounting job in between centers	Driving plate. Face plate & fixed & traveling steadies- construction and use. Transfer caliper-its construction and uses. Lathe centers-types and their uses. Lathe carrier-function, types & uses.
21 & 22	Turning practice-between centers on mandrel (Gear blanks). Fitting of dissimilar materials- M.S. in brass, aluminium, in cast iron etc. Knurling practice in lathe (Diamond, straight, helical & square).	Knurling meaning, necessity, types, grade, cutting speed for knurling. Lathe mandrel-different types and their uses. Concept of interchangeability, Limit, Fit and tolerance as per BIS :919-unilateral and bilateral system of limit, Fits- different types, symbols for holes and shafts. Hole basis & shaft basis etc. Representation of Tolerance in drawing.
23-25	Revision	
26	Examination	

SYLLABUS FOR WORKSHOP SCIENCE AND CALCULATION
SEMESTER-I

Week No	Workshop Science and Calculation
1	- Introduction to Iron and Steel. Differences in Iron & steel.
2	- Introduction to Property and uses of C.I. and wrought Iron. - Iron and steel properties and uses.
3	- Properties and uses of plain carbon steel and alloy steel.
4	- Properties and uses of non ferrous metals and alloys Fraction and decimal - conversion fraction decimal and vice-versa.
5	- Properties and uses of copper, zinc, lead, tin, aluminum.
6-7	- Composition, properties and uses of brass, bronze, solder, bearing material, timber, rubber etc.
8	- System of units, British, metric and SI units for length, area, volume capacity, weight, time, angle, their conversions. - Effect of alloying elements in the properties of C.I. & steel.
9	- Unit of temperature for & related problems. Standard & absolute temp.
10-11	- Mass, volume, density, weight, sp. Gravity & specific weight. S.I. M.K.S. and F.P.S. units of force, weight etc. their conversion to related problems.
12	- Inertia, rest and motion, velocity and acceleration.
13	- Types of forces, its units and Weight calculation.
14	- Revision & Test - Power and roots Factor, Power base exponents number. Multiplication and division of power and root of a number. Square root of number and problems.
15	- Heat & temperature, thermometric scales, their conversions.
16-17	- Work energy and power, their units and applied problems.
18-19	- Percentage, changing percentage to decimal and fraction and vice versa. Applied problems.
20	- Problem on percentage related to trade.
21	- Different types of loads, stress, strain, modulus of elasticity. Ultimate strength, different types of stress, factor of safety, examples.
22	- Ratio & proportion- Ratio, finding forms ratio proportions, direct proportion and indirect proportion. Application of ratio and proportion & related problems.
23-25	Revision

26	Examination
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SYLLABUS FOR ENGINEERING DRAWING
SEMESTER-I

Week No	Engineering Drawing
1-2	- Engineering Drawing-- introduction to Engg. Drawing and its importance.
3	- Use of drawing instruments –Drawing of straight, inclined and curved lines.
4	- Exercise on linear and angular measurements.
5	- Types of lines their meaning & application as per BIS SP: 46-2003.
6-7	- Simple conventional symbols for material and parts as per BIS SP: 46-2003. - Geometrical construction of rectangles, square, circles.
8	- Geometrical construction of polygon and ellipse, parabola & hyperbola.
9	- Geometrical construction of involutes, oval, and helix.
10-11	- Free hand sketching of straight lines, rectangles, circles, square, polygons, ellipse.
12	- Standard printing style for letters and numbers as per BIS : SP: 46-2003 using stencils
13	- Free hand sketching of simple geometrical solids, cube, cone, prism, cylinder, sphere, pyramids.
14	- Scales- Types & its use.
15	- Revision & Test - Construction of diagonal scale.
16	- Simple dimensioning technique, size and location, dimensions of parts, holes angles, taper, screw etc. as per BIS SP: 46-2003.
17	- Transferring measurements for linear, angular, circular dimensions from the given object to the related free hand sketches using different measuring instruments.
18-19	- Pictorial drawings, isometric drawings of simple geometrical solids.
20	- Oblique/orthographic projection of simple geometrical solids.
21	- Orthographic drawings: Application of both the first angle and third angle. Isometric drawing of simple machined & casting blocks.
22	- Free hand sketches of trade related hand tools and measuring tools.
23-25	Revision
26	Examination

SYLLABUS FOR EMPLOYABILITY SKILLS

SEMESTER-I

1. I.T. Literacy	
Hours of Instruction : 20 Hrs.	Marks Allotted : 20
Computer	- Introduction, Computer and its applications, Hardware and peripherals, Switching on and shutting down of computer.
WINDOWS	- Basics of Operating System, WINDOWS, The user interface of Windows OS, Customizing Windows Operating System, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications.
MS office	- Basic operations of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creation and Editing of Text, Formatting the Text, Printing document, Insertion & creation of Tables. - Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets
INTERNET	- Basic of Computer Networks (using real life examples), Definitions of Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks), Applications of Internet : Browsing, Searching, Emailing, Social Networking
WEB Browser	- Meaning of World Wide Web (WWW), Search Engines with examples, Web Browsing, Accessing the Internet using Web Browser, Downloading Web Pages, Printing Web Pages - Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT – ACT, Importance of information security and IT act, types of cyber crimes.
2. English Literacy	
Hours of Instruction: 15 Hrs.	Marks Allotted : 15
Pronunciation	- Phonetics and pronouncing simple words.
Listening	- Interpreting conversation and discussions related to everyday life, Responding to spoken instructions in order to carry out requests and commands.
Speaking	- Asking and answering simple questions in English to describe people, things, situations and events.
Reading	- Reading and interpreting simple sentences, forms, hoardings, sign boards and notices.
Writing	- Writing sentences with simple words, reply to everyday office correspondence, - Writing CV & simple application forms.
3. Communication skill	
Hours of Instruction: 15 Hrs.	Marks Allotted : 15
Communication Skills	- Definition, Effective communication, Verbal communication, Use of right words, Non verbal communication, Body Languages.
Motivation	- Self awareness, Goal setting, Career planning, Values and Ethics
Time management	- Managing time effectively through planning
Facing Interviews	- Appearance and behaviour in an interview, Do's and don'ts
Behavioral Skills	- Attitude, Problem Solving, Thinking Skills, Confidence building