



केन्द्रीय शैक्षणिक एवम् तांत्रिक माहिती संशोधन समीती

CENTRAL EDUCATION & INFORMATION TECHNOLOGY RESEARCH COMMITTEE

AN AUTONOMOUS INSTITUTION REGD. BY THE GOVT. OF NCT OF DELHI UNDER ITA 1882 GOVT. OF INDIA

REGD. BY NCS-MINISTRY OF LABOUR AND EMPLOYMENT GOVT. OF INDIA

REGD. AT MINISTRY OF MICRO, SMALL AND MEDIUM ENTERPRISES (MSME), GOVT. OF INDIA

An Autonomous Organization works for IT, HRD & Literacy



NCS-REGD. OFFICE
Govt. of India



सत्यमेव जयते

REGD. NO.: S14K81-1040424644087

Diploma in Machinist(Grinder)

Machinist (Grinder) is a machine tools grinding vocational trade. Trade duration is two years with four semesters of six months each. During class teaching, students are introduced to different aspects of machine and other grinding techniques; topics like operating a variety of machine tools to produce parts and instruments; instrument makers who fabricate, modify or repair mechanical instruments; fabricating and modifying parts to make or repair machine tools or maintaining industrial machines, applying knowledge of mechanics, mathematics, metal properties, layout and machining procedures. Trade is career orienting in nature that opens many job fields for them.

Syllabus

Sem. I		
Sr. No.	Subjects of Study	
	Trade Practical	Trade Theory
1	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.	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.
2	Identification of tools & equipments as per desired specifications for marking &	Description of hand tools, Safety precautions, care and maintenance and material from

	sawing(Hand tools , Fitting tools & Measuring tools) Selection of material as per application Visual inspection of raw material for rusting, scaling, corrosion etc.	which they are made. Ferrous and nonferrous metal and their identification by different methods. Application and use of pedestal grinder.
3	Grinding of Chisels, Hack sawing, Measuring different types of jobs by steel rule caliper etc	Theory of Semi precision instruments.
4	Drilling, reaming, tapping and threading with dies and use of coolants.	Relation between drill & tap sizes, care of taps and dies and their correct use
5	Drilling different sizes of holes by hand and machine.	Brief description of drilling machine use and care
6	Filing practice, simple fitting	Heat treatment of metals, its importance, various methods of heat treatment
7	Centre lathe and parts, setting of jobs and tools grinding of lathe tools of various angles	Brief description of a Centre lathe, its use
8	Parallel turning, taper turning and boring. Using compound rest and TT attachment.	Lathe tools and their uses taper and its types and problems on taper.

9	Simple screw cutting (External and Internal)	Method of screw cutting simple calculation.
10	Simple plain turning	Thread and its element types.
11	Safety rule on shop floor maintenance and control of grinding machines oiling cleaning etc.	Introduction to Grinding trade and machine safety precautions according to IS: 1991-1962.
12	Measurement of different types of job by steel rule, caliper etc. Taper by angular protractor.	General measuring tools (used in grinding shop) their description, use care and maintenance
13	Setting grinding wheel on wheel flange, truing and balancing of wheels.	General dressing tools used in grinding section such as wheel, diamond dresser, steel type dresser, abrasive dresser and nonferrous dresser
14	Checking measuring various types of jobs using micrometers, Vernier caliper, Vernier Height gauge etc	Precision instruments English and metric micrometer, vernier caliper, dial test indicator etc. their description and uses
15	Grinding practice on surface and cylindrical grinding machine (Grinding should be performed both on soft and hardened materials).	Principle and value of grinding in finishing process, various types of grinding wheels their construction and characteristic glazed and loaded wheels.



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16	Grinding practice on surface and cylindrical grinding machine.	-do-
17	Rough and finish grinding of surface and cylindrical job according to drawings.	Different types of abrasive, manufacture of grinding wheels, their grades.
18	Demonstration on selection of grinding wheels for grinding different metals, selection of suitable wheel to obtain rough and IS: 1249- 1958.	Factors effecting selection of wheels, identification of wheel, marking system of grinding wheels IS: 551- 1966.
19	Grinding different metals with suitable grinding wheels.	Grit and different types of bonds, such as vitrified, resinoid, rubber etc.
20	Externals and internal grinding operation, changing the wheel speed, obtain recommended wheel and controlling depth.	Grinding wheel speed, surface speed per minute conversion of peripheral speed to r.p.m. Depth of cut and range at usefulness.
Sem. II		
	Trade Practical	Trade Theory
1	Introduction Training- Revision of previous works. Machine setting for automatic movements and	Introduction Training- Revision of previous works. Common types of grinding machines. Plain cylindrical external and

	parallel grinding on cylindrical grinder.	internal cylindrical grinder and universal grinder.
2	Testing and mounting wheels sleeves, truing and rebalancing and grinding parallel mandrel.	Test for alignment and checking, balancing at wheel, dressing different types of wheel, dressers, their description and uses
3	Wheel balance and dressing grinding long bar using steady rest.	Test for alignment and checking, balancing of wheel, dressing different types of wheel, dressers their description and uses.
4	Grinding different types of jobs using machine chuck, face angle plate collets.	Holding devices such as Magnetic chuck, chucks and face plates collets their description and uses.
5	Table alignment with the help of test bar and dial test indicator parallel grinding and taper grinding (by swiveling machine table)	External grinding operational steps in external grinding of a job and precautions to be taken.
6	Grinding of eccentric job and different types of jobs using jigs and fixtures angle plates	Holding devices such as jig and fixture angle plates 'V' blocks etc. their description and uses.
7	Grinding of job by using face plate angle plate etc	Internal grinding operational steps in internal grinding of a job precautions to be taken

8	Grinding of plain/slot milling cutter	Milling cutters and its nomenclature.
9	-do-	Grinding of bushes and cylinders steps and precautions to be taken
10	Grinding bushes on mandrel within the close tolerance limits.	Rough and finish grinding limit fit and tolerances as per ISI: 919-1963. Basic size and its deviation, position of tolerances as per ISI: 919-1963.
11	Dry and wet grinding of different classes of metals such as cast iron, barzed carbide tip and different classes of steel.	Heat generated in grinding dry and wet grinding use of coolant, their composition and selection.
12	Grinding square block angle plate and angular block.	Grinding a square job grinding angular surface taker grinding by stane land taper and angle protractor
13	Grinding practice on drills reamers and taps.	Methods of grinding of drills reamers and taps.
14	Grinding slitting saw and side and face milling cutter.	Methods of grinding of milling cutters such as slitting saws, side and face milling cutter etc
15	Checking tapered or angular jobs with help of sine bar, Dial gauge.	Use of snap gauges, sine bar and slip gauges their description and uses. Polishing,

		lapping powder and emery clothes lapping flat surface.
16	Grinding milling cutter with straight flutes	Tools and cutter grinder their description, working principles, operations care and maintenance.
17	Grinding milling cutter with helical flutes	Special types of grinding machines and centreless grinders. T
18	Grinding internal bore of cylindrical job and use of telescopic gauge.	Grinding defects vibration, chattering, glazing and loading their causes and remedies.
19	-do-	Grinding different defects and remedies on its
20	Grinding carbide tipped tools and gauges (rough and finish grinding using disc and diamond wheels)	Applications of diamond wheel in grinding and grinding of tipped tools.
21	Making simple utility jobs with surface and cylindrical grinders.	Preventive maintenance and its necessity. Mode of frequency of lubrication.
	Project Work	