SKVV : SYLLABUS FOR TRADE IN VOCATION TRAINING CERTIFICATE PROGRAM

DURATION: SIX MONTHS TRADE : **STONE MINING MACHINE OPERATOR**

FIRST SEMESTER

Week No.	Trade Theory	Trade Practical	Engineering Drawing	Workshop Calculation & Science
VTC SMMO-101	**Introduction** Brief introduction about the trade. Environmental aspect of stone industry. Impact of stone industry on environment. Environment and environmental pollutions. Personal safety and occupational health hazards. Importance of safety and general precaution observed in the institute.	Introduction of the trade in the development of Industrial economy of the country. Industrial discipline and working environment. Familiarization with shop layout. Introduction to safety - including fire equipments and their uses. Necessary guidance to be provided to the new corners to become familiar with the working of industrial training institute.	Use of drawing instrument, mini drafter, Tee square and drawing boards.	Importance of work shop calculation and science
VTC SMMO-102	**Geology and exploration** Geology of dimensional stone resources in India: Explanation of the deposits of marble, granite, sandstone, flaggy limestone, slate etc. are occurring in various parts of India Geology and graphical distribution of different dimensional stones deposits in India viz. marble, granite, sandstone, limestone, slate etc. Characteristics of various stones Commercial verities of different stones Textures in different stones Physico mechanical properties of stones	Stone-An Introduction. Its types – natural stone, sandstone. Flaggy limestone, slate granite, marble etc. Dimensional and decorative stones. Commercial verities of different stones. Different types of textures in stones	Free hand sketching of straight line, rectangles, squares and triangles.	Common fraction, addition, subtraction, multiplication and division of common fraction.

	Chemical properties of various stones			
VTC SMMO-103	Properties of stones. Stone testing procedure.	Methods of finding stone strength, chemical composition and physical characteristics.	Freehand sketching of parallelogram, rhombus, polygon, circles and ellipse.	Units and dimensions. Properties of materials. Common fraction to decimal and vice versa.

ALLIED TRADE FITTER

VTC SMMO-104	Safety precautions and elementary first aid, common hand tools of fitter trade-their name description and material.	Tools: use of steel rule, square, scriber and dividers, centre punch, chisels, hammer, different files, bench vice and hand vice.	Lettering practice	Simple workshop problems involving addition, subtraction, multiplication and division of whole numbers.
VTC SMMO-105	Description of simple fitting operations, hacks awing, punching and filing. Types of files. Marking instruments and their uses. Use of vernier caliper, micrometer.	Saw, centre punch, filing to line. Filling a work-piece flat and training devices-fixing of mating nut. Locking pins. Hand tools: straight edge bloom bob, square etc.	Printing of letters and numbers.	Metric system, metric weight and measurement unit conversion. F.P.S. and C.G.S. system metric weight and measurement conversion factor, S.I.unit
VTC SMMO-106	Method of using drills taps and dies. Description of simple drilling machine-safety precautions-in handling grinding machines.	Funner – its use. Chipping, chisels, cold chisel, round nose threading and tapping, dieing, making external threads. To prepare edges of stone on grinding machine and check.	Free hand sketching with dimension to scale and proportionate sketching of hacksaw, centre punch, chisel, hammer, calipers, files, vices, taps and dies. Sketching of view of simple bodies.	Units of force, mass and weight. Solving of problems related to the trade.
VTC SMMO-107	Types of hack saw frames and blades- their selections and uses-types of files and their uses. Care and maintenance of files. Types and sizes of drills-cutting angles and speeds of drills-calculation of tap drill sizes.	Sawing filing to given diffusions-filing true and square notice different types of file operations-marking and clear and blind holes. Opening of twist drills safety points to be observed while operating a drilling machine.	Drawing of circles rectangles squares parallelograms. Rhombus, polygons.	Newton Laws of motions. Problems on Newton laws of motion.
VTC SMMO-108	Vernier caliper and Micrometer - uses, least count, vernier scale main scale and function of vernier caliper and micrometer.	Measuring internal and external dimensions by the use of vernier caliper and micrometer.	Free hand sketching of simple solids such as cubes, rectangular blocks, cylinders and the views of the objects viewed perpendicular to their surfaces or	Law of friction, co-efficient of friction simple related problems.

			axes.	

ALLIED TRADE ELECTRICIAN

VTC SMMO-109	Fundamental of electricity. Electron theory-free electron fundamental terms, definition, unit and effects of elastic units.	Practice in using cutting pliers, screw driver. Demonstration and practice bare conductor, joints such as Britannia, straight tee, western union joint.	Introduction to engineering drawings and Drawing of straight lines. Rectangles square and circles.	Areas of triangles rectangles, square, circle, regular polygons etc. and problem.
VTC SMMO-110	Various safety measure involved in the industry. Elementary first aid.	Demonstration on elementary first aid, artificial respiration.	Properties of lines, angles, triangles, circles, drawing as language of communication different types of lines and symbols used in building drawing.	Electricity and its uses-positive and negative terminals. Use of switch, fuse, conductor and insulators.
VTC SMMO-111	Explanation of electrical measuring instruments Ammeters, Voltmeter, Energy meter only explanation of work, power energy in DC circuit.	Study and use of Ammeters, Voltmeter, Energy meter etc.	Reading of plain scale, reading of tape and foot rule.	Calculation of volume and waste of simple solid bodies, cubes, solid and hollow cylinder and related problems.
VTC SMMO-112	Identification of electrician hand tools.	Demonstration of electrician hand tools like screw-driver, pliers, tester and other hand tools.	Free hand sketching of pictorial view of an object.	Units of heat, problems of power and energy and units horsepower, watt, simple problem

CHARACTERSTIC OF DIMENSIONAL STONE

VTC SMMO-113	Introduction to characterization of dimensional stone i.e. marble, granite, sand stone, kota stone (flaggy limestone), slate etc. for their correct use & marketability. Application of all dimension stone products and their parameter. Introduction to petrographic, physical	Identifying of the mineral by petrographic examination. Physcio-Mechanical Test for selection of natural stone. Checking of compressive strength, impact strength, elastic constant, density/specific gravity.	Free hand sketching of pictorial view of an object. Introduction of Isometric view of an object.	Heat and temperature different thermometric problem Strength of materials and related problems. Stress, Strain Modulus of elasticity water absorption , density etc. .

	and mechanical properties of stones, testing of stones etc.			

STONE MINING

VTC SMMO-114	Introduction to mining machineries. Selection of mining machineries. The factors for selecting of mining machineries. Machineries used for various operation such as cutting , drilling, removing, sizing, transportation etc. Brief concept of mining and bench planning	Machineries and techniques used for various mining operations such as removal of over burden, drilling, hole alignment, blasting wire saw cutting, ,rock mass separation, block sizing, material handling, block excavation transportation etc. for different stones, Prevention operations and coolant uses.	Simple isometric scale drawing, isometric views of simple object such as quips, square and rectangular prism and pyramids. Code of practice general engineering drawings as published by I.S. to be understood following national building code.	L.C.M. & H.C.F., square root and cube root.
VTC SMMO-115	Drilling-Description, working principal, Construction & Major parts, alignment of holes etc. Safety & Precaution of drilling. Uses of drill the stone sector	Uses of Drilling Operating system Such as vertical, horizontal and their uses of different types of stone tool, Prevention operations and coolant uses.	Same as above	Algebra –algebraic symbols-addition, subtraction, multiplication and division .
VTC SMMO-116	Dragging winch: Description, working principal, Construction of Major Parts.	Demonstration and Practice on dragging winch, Use of dragging block of granite, marble and other natural stones.	Simple isometric scale drawing, isometric views of simple object such as quips, square and rectangular prism and pyramids.	Algebra –algebraic symbols-addition, subtraction, multiplication and division .
VTC SMMO-117	Compressor- Description & various types of compressor. such as pneumatic ,hydraulic system & jack for stone	Various components of air compressor, Defects and brief demonstration of types of power generator.	Sketching of Air Compressor and power generator	Mechanical properties of metals
VTC SMMO-118	Different types of stone mining machinery uses : Construction & working principal of quarry front cuts-Chain saws, Diamond belt saw, Diamond wire saw, Jiri M/c (kotah stone),Flame jet burner, water jet technique. Construction & working principal of drilling –	Uses of stone mining machineries and their preventive operation, such as quarry front cuts-Chain saws, Diamond belt saw, Diamond wire saw, Jiri M/c (kotah stone),Flame jet burner, water jet technique, Drilling – Performatic drilling : Slot drill/quany	Sketching of stone mining tools .	Algebra –algebraic symbols-addition, subtraction, multiplication and division of expression involving algebraic symbols simple equation transposition problem.

	Performatic drilling : Slot drill/quany master, drill for coplanar holes, Quarry bar m/c, Jack Hammer Construction & working	master, drill for coplanar holes, Quarry bar m/c, Jack Hammer Separation of main block(overturning the		

	principal of separation of main block(overturning the bench)- Hydraulic jack, splitting bag, Air bag, pneumatic(water) bag, Construction working principal of Hydraulic excavator. Construction & working principal of sizing of block –diamond wire saw, jack hammer, Feather &wedges, air pillows. Construction & working principal of removal waste block- Construction & working principal of Block handling machinery- Jib crane, Derrick crane, Mobile crane, Front & Loader. Construction & working principal of other service machinery- Power generator, Air compressor, hole finder(Cerca fori).	bench)- Hydraulic jack, Jack Hammer, splitting bag, Air bag, pneumatic(water) bag, Hydraulic excavators sizing of block –diamond wire saw, jack hammer, Feather &wedges Removal waste block- Hydraulic excavators, Tippers, Front & Loader Other service machinery- Power generator, Air compressor, hole finder(Cerca fori).		
VTC SMM O-119	**Project Work / Industrial Visit (Optional)**			

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TRADE : **STONE MINING MACHINE OPERATOR**

DURATION – SIX MONTH

SECOND SEMESTER

VTC SMMO-201	Study of stone mining, analysis of deposits, manual mining, sand stone mining, slate mining and granite mining, flaggy limestone mining etc/	Concept of bench planning and how to start mining operations , Drilling and channeling operation, separation of block application of blasting technique, diamond wire saw cutting technique.	Sketching of stone mining tools.	Algebra –algebraic symbols-addition, subtraction, multiplication and division of expression involving algebraic symbols simple equation transposition problem.
VTC SMMO-202	Types of manual and mechanized mining.	Application of wire saw, flame cutting, water channeling, marble mining.	Properties of lines and angles, triangles and circle	Standard algebraic formulae e.g.
VTC SMMO-203	Manual method of mining and various operations.	Removal of overburden, preparation of free faces, preparation of block and transportation of block and overburden.		Finding of decimal values, use of approximation, speed velocity, acceleration retardation equation of motion-related simple problem.
VTC SMMO-204	Mechanized method of marble mining and operations.	Application of diamond wire saw, chain saw and belt saw.	-Do-	Expansion of solid, liquid and gases and their related problems.
VTC SMMO-205	Description of various machinery used for separation of main block like hydraulic jacks, splitting bags-air bags. Hydraulic excavators.	Application of machinery used for separation of main block. Hydraulic jacks, splitting, bags-air bags. Hydraulic excavators.	-Do-	
VTC SMMO-206	Description of machinery used for removal of waste rock hydraulic excavator, front end loader.	Application of machinery used for removal of waste rock, hydraulic excavator front end loader.	Freehand isometric sketching of simple object with dimensions.	Measuring of Horse Power, simple problem on work, power and energy.
VTC	Description of block	Application of block	-Do-	Measuring of HP,

207	handling machinery-jib crane, derrick crane, mobile crane and front loaders.	handling machinery-jib crane, derrick crane, mobile crane and front loaders.		BHP, FHP and applied shop problems.
VTC SMMO-208	Description of service machinery-power generator, air compressor.	Application of service machinery-power generator, air compressor.	Interpretation of building drawing, preparation of plan, elevation and section of a simple building .	Knowledge of computer operating, components of computer, practice on computer.

VTC SMM O-209	Impact of stone industry on, environment and environmental pollution.	Study on air pollution control devices.	-Do-	Transmission of heat-conduction, convection and radiation. Different form of energy-thermal, electrical, mechanical.
VTC SMM O-210	Water pollution, quarry waste and its application environmental problem due to marble slurry.	Study on water pollution devices.	Sketching of views of simple bodies.	Practice on computer.
VTC SMM O-211	Mining health and safety measure.	Method of using mining safety devices in mines.	Revision	Practice on computer.