

Syllabus for the subject

of

WORKSHOP CALCULATION & SCIENCE

(For 3rd & 4th semester)

Under

CRAFTSMEN TRAINING SCHEME (CTS)

(For Mechanic Medical Electronics)

Re-Designed

in

2015

By

Government of India
Ministry of Skill Development & Entrepreneurship
Directorate General of Training
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE
Block - EN - 81 SECTOR - V, SALT LAKE CITY, KOLKATA - 700 091

3rd semester
Workshop Calculation and Science
For the Trade of Mechanic Medical Electronics

Calculation			Science		
Sl. No.	Description	Hrs.	Sl. No.	Description	Hrs.
1	<p>Indices: Laws of indices related problems.</p> <p>Quadratic Equation: Introduction, solution of simple Quadratic equation and related problems.</p>	21	1	<p>Elasticity: Stress, strain, Modulus of elasticity, elastic limit, Hooks law, young's modulus.</p>	21
2	Solution of simple A.C. circuit with R.L.C. Calculation of power factor etc.		2	<p>Material: Introduction, types and properties. Uses of Conducting, Semi-conducting and insulating materials.</p>	
3	<p>A.C Waveform Calculation: Calculation of r.m.s, average, instantaneous value, peak value. Peak to peak value, Frequency and wavelength calculation and their relationship</p>		3	<p>Magnetism: Magnetic material, magnetic field, flux density, magnetic moment, m.m.f. Reluctance, permeability, susceptibility, electromagnet, solenoid and its practical applications.</p>	
4	<p>Series And Parallel Connection of Electrical and Electronic components:</p> <ol style="list-style-type: none"> 1. Calculation Series and parallel connection of Resistors. 2. Calculation Series and parallel connection of Capacitors. 3. Calculation Series and parallel connection of Inductors. 4. Calculation Series and parallel connection of Batteries. <p>Conversion of power flow to H.P. Calculation of KVA.</p>		4	<p>Pressure:- Pneumatic pressure, PSI, bar, atmospheric pressure, pressure gauge and absolute pressure, Heat treatment process.</p>	

4th semester Workshop Calculation and Science
Mechanic Medical Electronics

Calculation			Science		
Sl. No.	Description	Hrs.	Sl. No.	Description	Hrs.
1	Power supply: Calculation of SMPS, regulation, Calculation of load and wattage for selection of UPS, calculate of back up time of Battery related to UPS and Load, calculate of voltage regulation , firing angle calculation of ripple factor, voltage regulation of DC voltage. Calculate the regulation of solar power.	21	1	Power transmission by shaft, belts and ropes.	21
			2	Friction: Law of friction, co-efficient of friction, angle of friction, advantage and disadvantage of friction.	
			3	Force: Resolution and Composition of forces. Representation of forces by vectors, simple problems on lifting tackles like Jib wall, crane solution of problems with the aid of vectors, General condition of equilibrium for series of forces on a body.	
2	Modulation: AM/FM modulation index calculation, calculation of Bandwidth, Percentage of modulation in FM/AM.		4	Gravity: Centre of Gravity, simple experiments stable, unstable and neutral equilibrium.	
3	Number Systems: Introduction, Decimal, Binary, Octal, Hexadecimal, BCD code, ASCII code, Bit, Byte, KB, MB, GB, Conversion, Addition, Subtraction, Multiplication, Division, 1 st and 2s complement method, 9s and 10s complement method. Boolean Algebra: Simplification of Boolean Algebra and equations.				