Syllabus for the subject

of

WORKSHOP CALCULATION & SCIENCE

(For 3rd & 4th semester)

Under

CRAFTSMEN TRAINING SCHEME (CTS)

(For Civil Engineering Assistant)

Re-Designed

in

2015

By

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Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

Block - EN - 81 SECTOR - V, SALT LAKE CITY, KOLKATA - 700 091

SYLLABUS FOR WORKSHOP SCIENCE AND CALCULATION

For the trade of Civil Engineering Assistant

SEMESTER-III

Sl. No	Workshop Calculation	Hrs.	Sl. No	Workshop Science	Hrs.
1	- Area of cut-out regular surfaces: circle and segment and sector of circle and Ellipse.	21	1	- Forces definition. - Definition and example of compressive, tensile, shear forces, axial and tangential forces. Bending Moment. B.M. & S.F. for simply supported, cantilever and overhanging beams. Simple problems on lifting tackles like Jib, Crane, etc.	21
2	- Area of irregular surfaces by Simpson's Rule. - Applied problems		2	- Circular Motion: Relation between circular motion and Linear motion, Centrifugal force, Centripetal force	
3	- Volume of cut-out solids: hollow cylinders, frustum of cone, block section. - Volume of simple solid blocks.		3	- Friction- co-efficient of friction. Advantages and disadvantages. Simple problem related to friction in horizontal plane.	
4	Mensuration: - Area of irregular Surface. area and volumes of cylinders, pyramids and spheres		4	CENTROID Centroid of Symmetrical shapes (solid / hollow square, rectangular, circular, I Sections) - Centroid of Asymmetrical shapes (triangular, semi circular, quadrant, trapezoidal, parabolic sections)	
5	Estimation & costing of material, labour of simple structure.		5		
6	**Revision & Test**				

SYLLABUS FOR WORKSHOP SCIENCE AND CALCULATION

For the trade of Civil Engineering Assistant

SEMESTER-IV

Sl. No	Workshop Calculation	Hrs.	Sl. No	Workshop Science	Hrs.
1	**Algebra** : Solving Quadratic Equation	21	1	- Centre of gravity, simple experimental determination, stable, unstable & neutral equilibrium, simple examples	21
2	Co-ordinate Geometry: - Problems on distance between two points, collinear, equidistance from third point, isosceles triangle, distance of diagonals of quadrilateral.		2	- Transmission of power by belt, pulleys & gear drive. - Illustration of Transmission of power by belt pulley and gear drive. Advantages & disadvantages of belt & gear drive.	
3	- Read images, graphs, diagrams – bar chart, pie chart. - Graphs: abscissa and ordinates, graphs of straight line, related to two sets of varying quantities.		3	- Stress, strain, Hooks law, ultimate strength, factor of safety, simple problems on stress & strain. - Basic study of stress-strain curve.	
4	Simple concept on Statistics: - Frequency distribution table & graph - Mean, median & mode - Examples on mass scale productions.		4	Bending Moment, Shearing force, Beam – simply supported Bean, Simply supported Bean with distributed load, Cantilever with point load at the free end, Cantilever with distributed load & its calculations.	
5	**Revision & Test**				