

AMERICAN WELDING SOCIETY

CERTIFIED WELDING ENGINEER PART# 1 & 2

AWS-CWEng # 1&2

Certification Program for the Year-2021

Online / Direct Seminar

Authorized International Agency:



BETZ ENGINEERING & TECHNOLOGY ZONE

Door # 21, Dharakeshwari Nagar 1st Street, Sembakkam,
Tambaram to Velacherry Main Road,
Chennai – 600 073, INDIA.

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BETZ ENGINEERING & TECHNOLOGY ZONE

About Us...

BETZ Engineering & Technology Zone is an accredited International Agency for American Welding Society, Florida, U.S.A., to conduct Seminars and Certification Programs for AWS in India and Worldwide. BETZ is an ISO 9001:2015 company, also BETZ is the Only 'ATF – Accredited Test Facility' of AWS to evaluate and certify welders in India.

Individuals with AWS Certified Welding Engineer certification have demonstrated their skills for preparing or reviewing written instructions for the production of welded joints. They are thoroughly familiar with various codes, specifications, standards and other aspects of fabrication and assembly. The CWEng often prepares and produces reports, which accurately reflect professional judgment and is able to work with management representatives, inspection personnel, welders and support crafts, understanding the integrated role of each in the development of weldments

BETZ has been assessed and accredited by NABL in accordance with the standard ISO/IEC/17025 in the field of Testing , Non-Destructive Testing & Mechanical Testing Certificate # TC 5030

AWS-CWEng Part# 1 & 2 SCHEDULE-2021

Month	Site Code	AWS CWE Part # 1&2	Seminar City	Exam date	Exam City
January	IN72521	25 to 30	Chennai	January 31, 2021	Chennai
February	IN73121	23 to 28	Chennai	February 28, 2021	Chennai
March	IN73721	25 to 30	Chennai	March 31, 2021	Chennai
April	IN74221	24 to 29	Chennai	April 30, 2021	Chennai
May	IN74621	25 to 30	Chennai	May 31, 2021	Chennai
June	IN75221	24 to 29	Chennai	June 30, 2021	Pondicherry
July	IN75821	25 to 30	Chennai	July 31, 2021	Chennai
August	IN76221	25 to 30	Chennai	August 31, 2021	Pondicherry
September	IN76821	24 to 29	Chennai	September 30, 2021	Chennai
October	IN77221	25 to 30	Chennai	October 31, 2021	Chennai
November	IN77721	24 to 29	Chennai	November 30, 2021	Chennai
December	IN78421	24 to 29	Chennai	December 30, 2021	Chennai

Application must be emailed to BETZ no later than (5) weeks before the Exam Date

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Eligibility:

In order to qualify for a certified welding engineer the candidate must be an individual

- a. Having Bachelor of Engineering (B.E) degree and a minimum of one (1) year relevant experience.
- b. Having Bachelor of Technology (B.Tech.) degree and a minimum of two (2) years relevant experience.
- c. Having other related Bachelor of Science (B.Sc.) degrees and a minimum of five (5) years of relevant experience.
- d. Having an Associate in Applied Science (A.A.Sc.) degree and a minimum of ten (10) years of relevant experience.
- e. who have successfully completed high school or an equivalent program and a minimum of fifteen (15) years relevant experience.

Exam pattern

The AWS Certified Welding Engineer (CWEng.) examination consists of four parts. Parts 1 and 2 must be successfully completed in order to take Parts 3 and 4. The first two parts (1 and 2) of the exam are closed book and covers fundamentals of basic science and applied science. Exam will be of two hours for each part of written type with multiple-choice questions (total time of four hours). Part 1 consists of 35 questions of multiple choice and Part 2 has 25 questions of multiple choice. Both the Parts are given together and must be passed together. If the candidate fails in any one part, only that part must be repeated.

Examinations for Parts 3 and 4 are open book examinations on welding related disciplines and practical welding and related applications. Each examination is three hours in length (Duration). Part 3 has 45 questions of essay type. Part 4 has 39 questions of multiple choice type. Candidates that successfully pass Parts 1 and 2 will be invited to sit for Part 3 and Part 4 examinations and a separate application must be submitted to AWS.

Candidates must pass each of the four examination with an individual score of not less than 60% and attain a minimum weighted percentage of 70% for all 4 parts.

Seminar Pattern

This Six days course focuses on the fundamental knowledge in Basic Sciences (Part #1) of Mathematics, Physics, Chemistry and applied sciences of (Part # 2) strength of Materials, Heat Transfer & Fluid Mechanics and Electricity.

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- a. 2 days seminar will be conducted to cover the fundamentals of basic sciences of Part-1 examination that covers all the facets of AWS B5.16, knowledge of mathematics, physics and chemistry.
- b. 3 days seminar will be conducted to cover the Applied science fundamentals of Part-2 examination that covers the area of strength of materials, heat transfer, fluid mechanics and electricity.
- c. 1 day will be totally dedicated to discussion & review of Parts#1 and 2.

Part #1 – Basic Science Fundamentals

Mathematics:

Simple Calculations (multiple choices)

Special Functions (exp, log)

Trigonometric Functions (sin, cos, tan, cot, sec, csc, degrees, radians)

Algebraic Equations (linear, quadratic, polynomial)

Graphs And Equations (slope, intercept, roots, derivatives, minimum, maximum, interpolation and extrapolation)

Geometry (common geometric shapes)

Hyperbola, Parabola

Complex Numbers

Calculus (fundamentals of differential equations)

Statistics (population and samples: normal distribution, mean, standard deviation and variance)

Simple correlation: linear regression via least squares method, r2 correlation)

Physics:

Unit Conversion (dimension, mass, temperature, time, energy, power)

Mass, Weight, Volume, Density

Force, Energy, Work Done, Power

Stress, Strain, Hooke's Law (elasticity)

Moment And Momentum

Temperature, Heat, Temperature Measurement, Thermocouples, Pyrometers

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Thermal Properties of Materials (Thermal Conductivity, Thermal Expansion, Thermal stress and strain)

Chemistry:

Symbols (elements and inorganic compounds—gases, fluxes, etc.)

Molecular Weight and Stoichiometry

Acids and Bases

Balance Chemical Equations

Gas Combustion Reactions (chemical heat generation) and oxidation-reduction

reactions Ideal Gas Law (pressure, volume, temperature)

Mass Balance (as in E7018 coating decomposition to gas, slag and metal)

Bulk and Chemical Analysis Methodologies

Reactivity, Toxicity, Environmental Effect, Disposal.

Part #2 – Applied Science Fundamentals

Strength of Materials:

Load, Deformation (elastic and plastic, buckling), Stress- Strain, Young's Modulus, Shear Modulus, Stress-Strain Curve (yield stress, ultimate tensile stress, elongation) and tensile stress

Shear stress computation

Welded member cross-section effect

Mechanical testing (tensile, bend, fracture toughness, hardness, creep, and fatigue) and data interpretation

Law of Conservation of Energy/Momentum

Stress analysis

Typical engineering material properties

Heat Transfer and Fluid Mechanics:

Heat Conduction, Convection and Radiation, Thermal Conductivity and Diffusivity, Heat Transfer Coefficients of Engineering Materials and Fourier's Law

Heating Rate and Cooling Rate

Industrial Heating Methods, Power Consumption and Gas Flow Rates

Laminar and Turbulent Flow (reynold's number), Dew Point and Relative Humidity, Pressure and

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Regulators Venturi Effect and Gas Velocity Calculation

Atmospheric Pressure and Hyperbaric Conditions

Vacuum Equipment and Measurements

Electricity:

Current, Voltage, Resistance, Impedance and Circuits

Ohm's Law

Kirchhoff's Law

Resistance Loss and Current Rectification

Power Generation

AC/DC, polarity

Power Factor, Electromagnetic Properties, Right-Hand Rule

Current and Voltage Measurements (devices and principles)

Exam Pattern

Examination	Number of Questions	Duration	Min % to Pass	Exam Pattern Multiple Choice
<u>Prometric Exam</u>				
<u>Part 1-Basic Science</u>	<u>35</u>	<u>2 Hrs</u>	<u>60%</u>	<u>Closed Book</u>
<u>Part 2-Applied Science</u>	<u>25</u>	<u>2 Hrs</u>	<u>60%</u>	<u>Closed Book</u>

Minimum Weighted Percentage for all Four Parts

Registration Process

All the registrations are to be completed preferably Five (5) weeks prior to the commencement of seminar with full payment to avoid disappointment. For more information call us on 9840175179 / 9551665683.

E-mail: registration@welding-certification.com / rg_ganesan@yahoo.com Upon completion of registration process, candidates can collect their Hard copy of study materials and AWS QC1:2016 Specification for AWS Certification of Welding Inspectors. This will help candidates to start their preparations immediately.

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Training Venue



**BETZ ENGINEERING
&
TECHNOLOGY ZONE**
**Door # 21, Dharakeshwari Nagar
1st Street, Sembakkam,
Tambaram to Velacherry Main Road,
Chennai – 600 073, INDIA.**
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Mobile:9840175179/9551665681/83
E-mail: rg_ganesan@yahoo.com,
registration@welding-certification.com
www.welding-certification.com

Mode of payment

The Seminar fees Rs.40,000/- Must be made in Indian Rupees by Bank Draft or Wire Transfer to the Following Account.

NAME : BETZ Educational & Research Division

BANK : KARUR VYSYA BANK LTD

BRANCH : ALANDUR

ACCOUNT NUMBER : 1104115000021458

IFSC : KVBL0001104

The Examination Fee USD750 made by Wire Transfer to the following Account

Bank Name : JP Morgan Chase

Account No: 507618335

Routing Number : 322271627

Swift Code : CHASUS33

Bank Address: JP Morgan Chase

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Diamond Bar, CA 91765

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ALL THE BEST