



ACE
Engineering Academy
(Leading institute for ESE/GATE/PSUs)

COAL INDIA LIMITED (CIL)

Management Trainees

Online Test Series

MECHANICAL ENGINEERING

No. of Tests : 6



Full Length Mock Tests

6

All tests will be available till 28th February 2020

TEST SERIES HIGHLIGHTS

- ★ Rank will be given for each test.
- ★ Test wise and overall statistics.
- ★ Comparison with toppers.
- ★ Question wise and test wise time analysis & comparison with toppers on time management.

Full Length Mock Tests

Test No	Mock codes	No. of Questions	Max Marks	Duration	Date of Activation
Test-01	Full Length Mock Test-1 (Paper-I + Paper-II)	200	200	3 hours	10-01-2020
Test-02	Full Length Mock Test-2 (Paper-I + Paper-II)	200	200	3 hours	17-01-2020
Test-03	Full Length Mock Test-3 (Paper-I + Paper-II)	200	200	3 hours	24-01-2020
Test-04	Full Length Mock Test-4 (Paper-I + Paper-II)	200	200	3 hours	31-01-2020
Test-05	Full Length Mock Test-5 (Paper-I + Paper-II)	200	200	3 hours	07-02-2020
Test-06	Full Length Mock Test-6 (Paper-I + Paper-II)	200	200	3 hours	14-02-2020

Note:

The Syllabus considered as per previous Notification of COAL INDIA. ACE Engineering Academy does not take any responsibility for deviations in syllabus in the final Coal India exam. As per Notification of Coal India each question carries '1' mark and there is no negative marks for wrong answer.

Tests will be activated at 6:00 pm on scheduled day

Paper-I_Syllabus	
Subject Name	Syllabus
General Knowledge/awareness	Everyday Science, Scientific Research, Sports, Indian Culture, Indian History, Indian national movement, World & Indian Geography, Natural resources Indian Economy, Indian Polity, Indian COntstitutiOn,NatiOnal & International current affairs, Environment, India's Agriculture, Trade & Commerce, Basic Information technology.
Reasoning	Analogies, similarities and differences, space Visualization, spatial orientation, problem solving, analysis, judgement, decision making, Visual memory, discrimination, observation, relationship concepts, arithmetical reasoning and figural classification, arithmetic number series, non-verbal series, coding and decoding, Word Building statement conclusion, syllogistic reasoning ,puzzle, Venn Diagrams , Space Visualization , Symbolic/Number Classification, Figural Classification etc.
Numerical ability	Number System,decimals,fractiOns and relationships between numbers, Percentage. Ratio & Proportion, Square roots, Averages, Interest, Profit and Loss, Discount, Mixture and Allegation, Time and distance, Time & Work, Basic algebraic identities of School Algebra, , Factor, Heights and Distances. AP. & G.P.Series
General English	Error recognition, fill in the blanks (verbs,PrepOsitiOn etc.) synonyms, antonyms, spelling/detecting Mis—spelt words, idioms & phrases, one word substitution, sentences structure, Sentence completion, shuffling of sentence parts, shuffling of sentences in a passage, comprehension passage

Paper-II_Syllabus

Subject Name	Syllabus
Engineering Mechanics	Free-body diagrams and equilibrium; trusses and frames; virtual work; kinematics and dynamics of particles and of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations, collisions.
Mechanics of Materials	Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods; thermal stresses; strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength.
Theory of Machines	Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses; gyroscope.
Vibrations	Free and forced Vibration of single degree of freedom systems, effect of damping; Vibration isolation; resonance; critical speeds of shafts.
Machine Design:	Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; principles of the design of machine elements such as bolted, riveted and welded joints; shafts, gears, rolling and sliding contact bearings, brakes and clutches, springs.
Fluid Mechanics	Fluid properties; fluid statics, manometry, buoyancy, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; Viscous flow of incompressible fluids, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes, bends and fittings.
Heat—Transfer	Modes of heat transfer; one dimensional heat conduction, resistance concept and electrical analogy, heat transfer through fins; unsteady heat conduction, lumped parameter system, Heisler's charts; thermal boundary layer, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; heat exchanger performance, LMTD and NTU methods; radiative heat transfer, Stefan-Boltzmann law, Wien's displacement law, black and grey surfaces, View factors, radiation network analysis.
Thermodynamics:	Thermodynamic systems and processes; properties of pure substances, behaviour of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations.
Applications	Power Engineering: Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat. I.C. Engines: Air-standard Otto, Diesel and dual cycles. Refrigeration and air-conditioning: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes. Turbomachinery: Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplan turbines.
Engineering Materials	Structure and properties of engineering materials, phase diagrams, heat treatment, stress-strain diagrams for engineering materials.

Subject Name	Syllabus
Casting, Forming and Joining Processes	Different types of castings, design of patterns, moulds and cores; solidification and cooling; riser and gating design. Plastic deformation and yield criteria; fundamentals of hot and cold working processes; load estimation for bulk (forging, rolling, extrusion, drawing) and sheet (shearing, deep drawing, bending) metal forming processes; principles of powder metallurgy. Principles of welding, brazing, soldering and adhesive bonding.
Machining and Machine Tool Operations	Mechanics of machining; basic machine tools; single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, design of jigs and fixtures.
Metrology and Inspection	Limits, fits and tolerances; linear and angular measurements; comparators; gauge design; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in manufacturing and assembly.
Computer Integrated Manufacturing	Basic concepts of CAD/CAM and their integration tools.
Production Planning and Control	Forecasting models, aggregate production planning, scheduling, materials requirement planning.
Inventory Control	Deterministic models; safety stock inventory control systems.
Operations Research	Linear programming, simplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM.