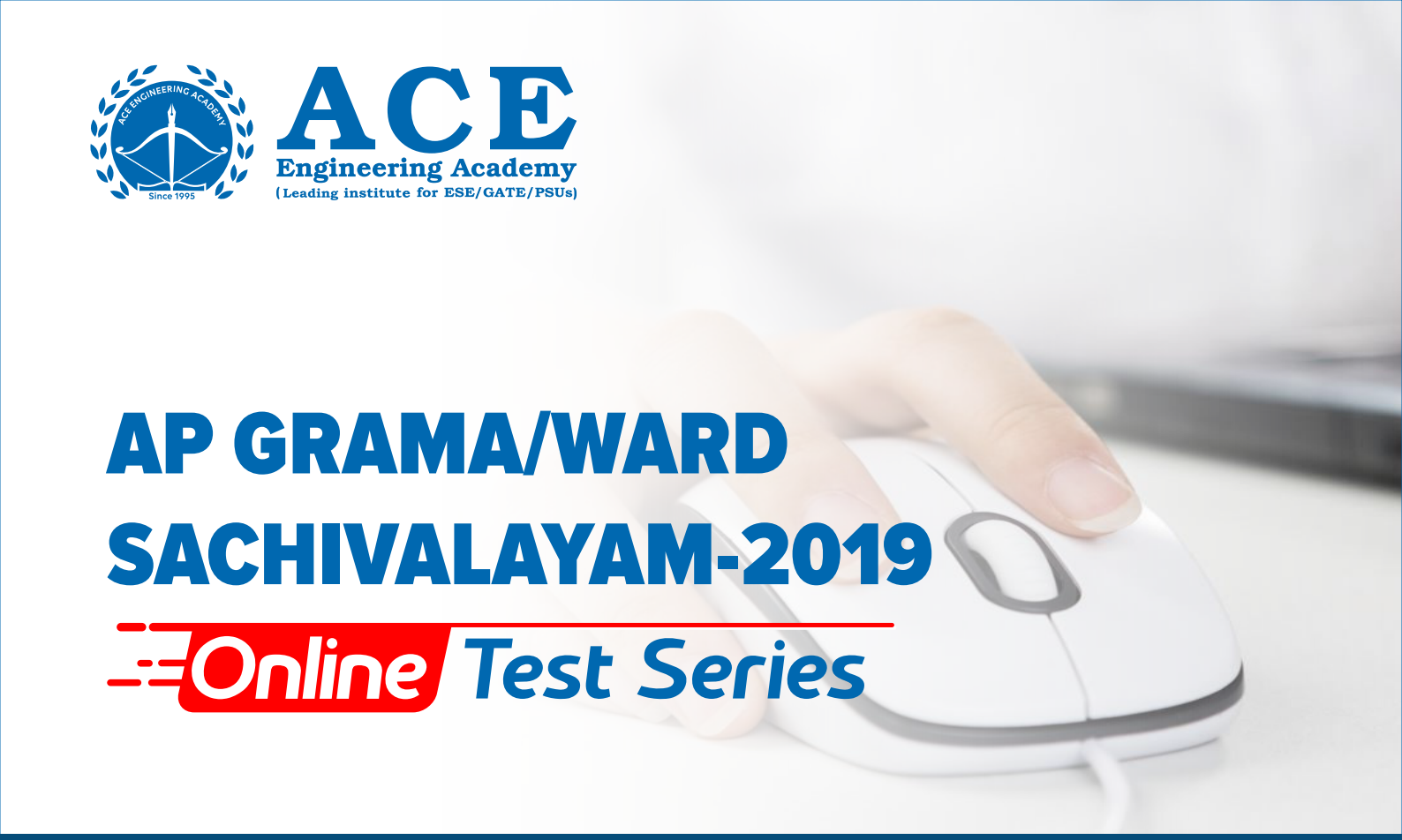
ACE Engineering Academy
(Leading institute for ESE/GATE/PSUs)

AP GRAMA/WARD SACHIVALAYAM-2019

Online Test Series



Mechanical Engineering

No. of Tests : 18

Subject Wise Tests	15
Full Length Mock Tests	3

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.

Subject-wise Tests

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

Test No	Subject Name	No. of Questions	Max Marks	Duration	Date of Activation
Test-01	General Science and its applications to the day to day life, Contemporary development in science and Technology and information Technology. + Current affairs of regional, national and International importance.	30	30	30 Min	02-08-2019
Test-02	Strength of Materials-1	30	30	30 Min	03-08-2019
Test-03	Engineering Mechanics	30	30	30 Min	04-08-2019
Test-04	History & Culture of India with specific focus on AP + Society, Social justice, rights issues	30	30	30 Min	05-08-2019
Test-05	Strength of Materials-2	30	30	30 Min	06-08-2019
Test-06	Fluid Mechanics-1	30	30	30 Min	07-08-2019
Test-07	Indian polity and governance: constitutional issues, 73/74th Amendments, public policy, reforms ad centre – state relations with specific reference to Andhra Pradesh + Key welfare & development schemes of Government of Andhra Pradesh.	30	30	30 Min	08-08-2019
Test-08	Engineering Drawing	30	30	30 Min	09-08-2019
Test-09	Reinforced concrete structures	30	30	30 Min	10-08-2019
Test-10	Physical geography of Indian sub-continent and Andhra Pradesh.	30	30	30 Min	11-08-2019
Test-11	Hydraulic Pumps	30	30	30 Min	12-08-2019
Test-12	Surveying	30	30	30 Min	13-08-2019
Test-13	General Mental ability and reasoning + Quantitative aptitude including data interpretation + General English	30	30	30 Min	14-08-2019
Test-14	Production Technology	30	30	30 Min	15-08-2019
Test-15	Fluid Mechanics-2	30	30	30 Min	16-08-2019

Full Length Mock Tests

Test No		No. of Questions	Max Marks	Duration	Date of Activation
Test-16	Full Length Mock Tests-1	150	150	2 Hours 30 Min	18-08-2019
Test-17	Full Length Mock Tests-2	150	150	2 Hours 30 Min	22-08-2019
Test-18	Full Length Mock Tests-3	150	150	2 Hours 30 Min	26-08-2019

Note: The Syllabus considered as per Notifications of APGWSR. ACE Engineering Academy does not take any responsibility for deviations in syllabus in the final APGWSR exam. As per Notification of APGWSR each question carries '1' mark and negative marking of 1/4rd (i.e. 0.25 Marks) for each wrong answer.

Syllabus for General Studies & Mental Ability (Part-A)

Subject Name	Syllabus
GENERAL STUDIES AND MENTAL ABILITY	1. General Mental ability and reasoning. 2. Quantitative aptitude including data interpretation. 3. General English. 4. Current affairs of regional, national and International importance. 5. General Science and its applications to the day to day life, Contemporary development in science and Technology and information Technology. 6. History & Culture of India with specific focus on AP. 7. Indian polity and governance: constitutional issues, 73/74th Amendments, public policy, reforms ad centre – state relations with specific reference to Andhra Pradesh. 8. Society, Social justice, rights issues. 9. Physical geography of Indian sub-continent and Andhra Pradesh. 10. Key welfare & development schemes of Government of Andhra Pradesh

Syllabus for Mechanical Engineering (Part-B)

Subject Name	Syllabus
Strength of Materials	**Strength of Materials-1:**Simple stresses and strains for ductile materials-mechanical properties of materials-Hooke's law-lateral strain poisson's ratio-Elastic constants and the relations between them-Composite sections-Resilience-Strain energy-Gradual and sudden loading Torsion-solid and hollow circular shafts.
	Strength of Materials-2:shear force and Bending moment diagrams for cantilever, Simply supported, fixed, continuous and overhanging beams subjected to point loads and UDL. Theory of simple bending-assumptions-bending equation-bending stresssection modulus-shear stress distribution across various sections like rectangular, circular and I-sections
Engineering Mechanics	Statics, Resolution of force, Equilibrium of forces, Parallelogram law of forces, triangle law of forces, polygon law of forces and Lami's theorem, Drawing the free body diagram, Centre of Gravity, Centre of Mass and centroid, Centroid of square, rectangle, triangle, semi-circle and trapezium, Centre of gravity of composite sections by analytical method `only (T-Section, L-Section Isection and channel section). Moment of Inertia, Theorems of Moment of Inertia. i) Parallel axes theorem, ii) Perpendicular axes theorem. c) Moment of Inertia for simple Geometrical Sections, Rectangular, circular and triangular section and Radius of Gyration. Calculation of Moment of Inertia and Radius of Gyration of a) I – Section, b) Channel Section, c) T – Section. d) L – Section, e) Z - section f) Built up Sections.

Subject Name	Syllabus
Fluid Mechanics	**Fluid Mechanics-1:**Properties, Ideal and Real fluids, Newtonian and Non-Newtonian fluids, compressible and incompressible fluids, Units, Fluid properties, Intensity of pressure, Pascal„s law, Atmospheric, Vacuum, Gauge and absolute pressures. Measurement of pressures by piezo-meter, U-Tube - manometer, differential manometer bourdon pressure gauge, buoyancy, Flow of Liquids, Types of fluid flowSteady and unsteady flow, Uniform and Non-uniform flow, Two &Three dimensional flow, Rotational & irrotational flow, Laminar & Turbulent flow, Reynold's Number. Pressure, potential and kinetic energy of liquids, total energy, Continuity equation for one-dimensional flow
Fluid Mechanics	**Fluid Mechanics-2:** Laws of conservation- Mass, Energy and Momentum, Velocity of liquids and discharge, Bernoulli's equation, Applications Venturimeters, pitot-tube, current meters, Flow through pipes, Various losses when liquid flows through pipes, Laws of fluid friction, The equations for loss of head in pipes due to friction, Minor losses in pipe flow, Hydraulic gradient and total energy line for different pipes, Pipes in series(Compound pipe) and equivalent pipe, Impact of jets, Force of jet striking at the centre and at the top of a fixed curved blade and moving curved blade, velocity triangles, Work done, power and efficiency.
Hydraulic Pumps	Function of a pump, Principle of operation of a reciprocating pump, single acting, double acting pumps, Effect of velocity and cceleration of fluids in suction and delivery pipes, Working principle & Constructional details of centrifugal pump, Comparison between Reciprocating and Centrifugal pumps, Priming of centrifugal pump and its necessary leakages of air its prevention, Work done by the impeller, Static head, Manometric head, Efficiencies-Manometric efficiency, Volumetric efficiency, Mechanical efficiency and Overall efficiency, Cavitation and its effect, Working principle of Jet & Submersible pumps.
Engineering Drawing	Construction of polygon: Construction of any regular polygon of given side using general method. Conical Curves: Ellipse, Parabola, Hyperbola, Eccentricity of above curves – Construction of ellipse by concentric circles method - Construction of parabola by rectangle method - Construction of rectangular hyperbola. Projection of points and Lines, projection of planes, projection of solids, Auxiliary views.

Subject Name	Syllabus
Reinforced concrete structures	Grades of concrete, characteristic strength, modulus of elasticity-I.S. 456 -2000-Philosophy of limit state design. Limit state of strength and serviceability, partial safety factor-design strength of materials and design loads - assumptions. Analysis and limit state design of rectangular beams singly, doubly reinforced and T-beams, Shear in RCC beams, lintels and sunshadesdevelopment length. Slabs analysis and limit state design of one way and two way slabs as per IS 456-2000 Torsion reinforcement. design of continuous slabs and beams Deflection check for slabs and beams. Detailing of reinforcement in singly reinforced and double reinforced simply supported beams of rectangular sections and lintels. one way and two way slabs. Columns: Codal provisions of I.S 456 2000 short and long columns different shapes design of short columns by limit state method - long columns concept, effective length for different end conditions. footings-isolated column footings - one way shear and two way shear. Stairs-types, loads on stairs.
Surveying	Chain surveying - purpose and principle -errors and corrections - different operations in chain surveying - obstacles - methods of calculation of area. Compass surveying - purpose and principle - bearings - traversing using prismatic compass - local attraction - errors - Levelling - definitions - component parts - errors - classification of levelling - contouring - characteristics and methods. Theodolite - principles and component parts - fundamental lines and relationship among them - adjustments of theodolite - measurement of horizontal and vertical angles - errors - traverse computations - bowditoh and transit rule. Tachometry principle - stadia tachometry - tangential tachometry, principle and uses of E.D.M. Electronic Theodolite, total station, Global positioning system - Importance, G.I.S - use and applications in Civil Engineering.
Production Technology	Working and operations of lathe, Drilling, shaper, slotter, planner, milling machines - Capstan and turret lathes - copying lathes - surface finishing operations - Honing, lapping, super finishing, electro plating, metal spraying. Equipment used in arc and gas welding. modern welding methods - Submerged arc, atomic, hydrogen, CO2, and ultrasonic welding, Forging processes and tools - cold and hot working processes. Pattern types - types of moulding sand and their properties - Defects in casting and welding.