

Topicwise Tests

| Test No. | Test Syllabus | No. of Ques. | Marks | Time | Activation Date |
|----------|--|--------------|-------|--------|-----------------|
| 1 | Heat Transfer-1: Equation of energy, steady and unsteady heat conduction, convection. | 17 | 25 | 45 min | Active |
| 2 | Heat Transfer-2: Radiation, thermal boundary layer and heat transfer coefficients, boiling, condensation and evaporation; types of heat exchangers and evaporators and their process calculations; design of double pipe, shell and tube heat exchangers, and single and multiple effect evaporators. | 17 | 25 | 45 min | |
| 3 | Chemical Reaction Engineering-1: Theories of reaction rates; kinetics of homogeneous reactions, interpretation of kinetic data, single and multiple reactions in ideal reactors. | 17 | 25 | 45 min | |
| 4 | Chemical Reaction Engineering-2: Non-ideal reactors; residence time distribution, single parameter model; non-isothermal reactors. | 17 | 25 | 45 min | |
| 5 | Chemical Reaction Engineering-3: Kinetics of enzyme reactions (Michaelis-Menten and Monod models); kinetics of heterogeneous catalytic reactions; diffusion effects in catalysis; rate and performance equations for catalyst deactivation. | 17 | 25 | 45 min | |
| 6 | Fluid Mechanics-1: Fluid statics, surface tension, Newtonian and non-Newtonian fluids, transport properties, shell-balances including differential form of Bernoulli equation and energy balance, equation of continuity, equation of motion, equation of mechanical energy, Macroscopic friction factors, dimensional analysis and similitude. | 17 | 25 | 45 min | |
| 7 | Fluid Mechanics-2: Flow through pipeline systems, velocity profiles, flow meters, pumps and compressors, elementary boundary layer theory, flow past immersed bodies including packed and fluidized beds, Turbulent flow: fluctuating velocity, universal velocity profile and pressure drop. | 17 | 25 | 45 min | Active |
| 8 | Mechanical Operations-3: Particle size and shape, particle size distribution, size reduction and classification of solid particles; free and hindered settling; centrifuge and cyclones; thickening and classification, filtration, agitation and mixing; conveying of solids. | 17 | 25 | 45 min | |
| 9 | Engineering mathematics-1: Linear Algebra, Calculus, Numerical Methods . | 17 | 25 | 45 min | |
| 10 | Engineering mathematics-2: Differential Equations, Complex Analysis, Probability and Statistics. | 17 | 25 | 45 min | |
| 11 | General Aptitude (Part-1): Numerical Ability, Numerical computation, numerical estimation, and data interpretation. | 17 | 25 | 45 min | Active |
| 12 | General Aptitude (Part-2) : Verbal Ability: English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning, numerical reasoning, verbal deduction and spatial aptitude. | 17 | 25 | 45 min | |
| 13 | Plant Design and Economics-1: Principles of process economics and cost estimation including depreciation and total annualized cost, cost indices, rate of return, payback period. | 17 | 25 | 45 min | |
| 14 | Plant Design and Economics-2: Discounted cash flow, optimization in process design and sizing of chemical engineering equipments such as heat exchangers and multistage contactors. | 17 | 25 | 45 min | |
| 15 | Instrumentation and Process Control-1: Measurement of process variables; sensors and transducers; P & ID equipment symbols; process modeling and linearization, transfer functions and dynamic responses of various systems, systems with inverse response. | 17 | 25 | 45 min | Active |
| 16 | Instrumentation and Process Control-2: Process reaction curve, controller modes (P, PI, and PID); control valves; transducer dynamics; analysis of closed loop systems including stability, frequency response, controller tuning, cascade and feed forward control. | 17 | 25 | 45 min | |
| 17 | Thermodynamics and Process Calculations-1: Steady and unsteady state mass and energy balances including multiphase, multi-component, reacting and non-reacting systems. Use of tie components; recycle, bypass and purge calculations; Gibb's phase rule and degree of freedom analysis. | 17 | 25 | 45 min | |
| 18 | Thermodynamics and Process Calculations-2: First and Second laws of thermodynamics. Applications of first law to close and open systems. Second law and Entropy. Thermodynamic properties of pure substances. | 17 | 25 | 45 min | |
| 19 | Thermodynamics and Process Calculations-3: Equation of State and residual properties, properties of mixtures: partial molar properties, fugacity, excess properties and activity coefficients; phase equilibria: predicting VLE of systems; chemical reaction equilibrium. | 17 | 25 | 45 min | Active |
| 20 | Chemical Technology-1: Inorganic chemical industries (sulfuric acid, phosphoric acid, chlor-alkali industry), fertilizers (Ammonia, Urea, SSP and TSP); natural products industries (Pulp and Paper, Sugar, Oil, and Fats). | 17 | 25 | 45 min | |
| 21 | Chemical Technology-2: Petroleum refining and petrochemicals; polymerization industries (polyethylene, polypropylene, PVC and polyester synthetic fibers). | 17 | 25 | 45 min | |
| 22 | Mass Transfer-1: Fick's laws, molecular diffusion in fluids, mass transfer coefficients, film, penetration and surface renewal theories; momentum, heat and mass transfer analogies. | 17 | 25 | 45 min | |
| 23 | Mass Transfer-2: Stage-wise and continuous contacting and stage efficiencies; HTU & NTU concepts; design and operation of equipment for distillation, absorption. | 17 | 25 | 45 min | |
| 24 | Mass Transfer-3: Leaching, liquid-liquid extraction, drying, humidification, dehumidification and adsorption, membrane separations(micro-filtration, ultra-filtration, nano-filtration and reverse osmosis). | 17 | 25 | 45 min | |

Single Subject Tests

| Test No. | Test Syllabus | No. of Ques. | Marks | Duration | Activation Date |
|----------|--|--------------|-------|----------|-----------------|
| 25 | Thermodynamics | 33 | 50 | 90 min | Active |
| 26 | Heat Transfer | 33 | 50 | 90 min | |
| 27 | Chemical Reaction Engineering | 33 | 50 | 90 min | |
| 28 | Process Calculation and Mechanical Operation | 33 | 50 | 90 min | |
| 29 | Engineering Mathematics | 33 | 50 | 90 min | |
| 30 | General Aptitude | 33 | 50 | 90 min | |
| 31 | Instrumentation and Process Control | 33 | 50 | 90 min | Active |
| 32 | Fluid Mechanics | 33 | 50 | 90 min | |
| 33 | Mass Transfer | 33 | 50 | 90 min | |
| 34 | Instrument and Process Control | 33 | 50 | 90 min | |
| 35 | Plant Design and Economics | 33 | 50 | 90 min | |
| 36 | Chemical Technology | 33 | 50 | 90 min | |

Multiple Subject Tests

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|----|--|----|----|--------|--------|
| 37 | Thermodynamics + Process Control | 33 | 50 | 90 min | Active |
| 38 | Chemical Reaction Engineering + Plant Design and Economics | 33 | 50 | 90 min | |
| 39 | Mass Transfer + Chemical Technology | 33 | 50 | 90 min | |
| 40 | Heat Transfer + Mechanical Operations | 33 | 50 | 90 min | |
| 41 | Instrumentation Process Control + Fluid Mechanics | 33 | 50 | 90 min | |
| 42 | Engineering Mathematics + General Aptitude | 33 | 50 | 90 min | |

Full Syllabus Tests

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|----|--------------------------------------|----|-----|---------|--------|
| 43 | Full Syllabus Test-1 (Basic Level) | 65 | 100 | 180 min | Active |
| 44 | Full Syllabus Test-2 (Basic Level) | 65 | 100 | 180 min | |
| 45 | Full Syllabus Test-3 (Basic Level) | 65 | 100 | 180 min | |
| 46 | Full Syllabus Test-4 (Basic Level) | 65 | 100 | 180 min | |
| 47 | Full Syllabus Test-5 (Advance Level) | 65 | 100 | 180 min | Active |
| 48 | Full Syllabus Test-6 (Advance Level) | 65 | 100 | 180 min | |
| 49 | Full Syllabus Test-7 (Advance Level) | 65 | 100 | 180 min | |
| 50 | Full Syllabus Test-8 (Advance Level) | 65 | 100 | 180 min | |

Mock Tests

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|----|------------------|----|-----|---------|--------|
| 51 | GATE Mock Test 1 | 65 | 100 | 180 min | Active |
| 52 | GATE Mock Test 2 | 65 | 100 | 180 min | |
| 53 | GATE Mock Test 3 | 65 | 100 | 180 min | |
| 54 | GATE Mock Test 4 | 65 | 100 | 180 min | |