

Subject	Subject Code	Topic/chapter
Process calculations & Thermodynamics (PC & TD)	PC	Steady and unsteady state mass and energy balances including multiphase, multicomponent, reacting and non reacting systems. Use of tie components: recycle bypass purge calculations: Gibbs phase rule and degree of freedom analysis.
	TD-1(BASIC)	First and Second law of thermodynamics. Application of first law to close and open system(compressor turbine nozzles etc), Second law and Entropy. Equation of states.
	TD2(ADVANCED)	Thermodynamics properties of pure substances, Residual properties, properties of mixture, partial molar properties, fugacity, excess properties and activity coefficients, phase equilibria, predicting VLE of systems, chemical reaction equilibrium.
Fluid mechanics & mechanical operation (FM & MO)	FM	Fluid statics, Newtonian and non-Newtonian fluids, shell-balances including differential form of Bernoulli equation and energy balance, Macroscopic friction factors, dimensional analysis and similitude, flow through pipeline systems, 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.
	MO	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.
HEAT TRANSFER (HT)	HT-1	Steady and unsteady heat conduction, convection and radiation, thermal boundary layer and heat transfer coefficients.

	HT-2	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.
Mass Transfer (MT)	MT-1	Fick's laws, molecular diffusion in fluids, mass transfer coefficients, film, penetration and surface renewal theories; momentum, heat and mass transfer analogies; stage-wise and continuous contacting and stage efficiencies; HTU & NTU concepts humidification, dehumidification
	MT-2	Design and operation of equipment for distillation, absorption, leaching, liquid-liquid extraction, drying, humidification, dehumidification and adsorption.
Chemical Reaction Engineering (CRE)	CRE-1(HOMO)	Theories of reaction rates; kinetics of homogeneous reactions, interpretation of kinetic data, single and multiple reactions in ideal reactors, residence time distribution, single parameter model; non-isothermal reactors;
	CRE-2(HETRO)	Non-ideal reactors, Kinetics of heterogeneous catalytic reactions; diffusion effects in catalysis.
Instrumentation and Process Control (PDC)	PDC-1	Measurement of process variables; sensors, transducers and their dynamics, process modeling and linearization, transfer functions and dynamic responses of various systems, systems with inverse response, process reaction curve,
	PDC-2	controller modes (P, PI, and PID); control valves; analysis of closed loop systems including stability, frequency response, controller tuning, cascade and feed forward control.
	PD	optimization in process design and sizing of chemical engineering equipments such as compressors, heat exchangers, multistage contactors

<p align="center">Plant Design and Economics (PDE)</p>	<p align="center">ECO.</p>	<p>Principles of process economics and cost estimation including depreciation and total annualized cost, cost indices, rate of return, payback period, discounted cash flow</p>
<p align="center">Chemical Technology (CT-1)</p>	<p align="center">CT-1</p>	<p>Inorganic chemical industries (sulfuric acid, phosphoric acid, chlor-alkali industry), fertilizers (Ammonia, Urea, SSP and TSP);</p>
	<p align="center">CT-2</p>	<p>natural products industries (Pulp and Paper, Sugar, Oil, and Fats); petroleum refining and petrochemicals; polymerization industries (polyethylene, polypropylene, PVC and polyester synthetic fibers).</p>
<p align="center">Engineering Mathematics (M)</p>	<p align="center">M-1</p>	<p>Linear Algebra: Matrix algebra, Systems of linear equations, Eigen values and eigenvectors. .</p> <p>Calculus: Functions of single variable, Limit, continuity and differentiability, Taylor series, Mean value theorems, Evaluation of definite and improper integrals, Partial derivatives, Total derivative, Maxima and minima, Gradient, Divergence and Curl, Vector identities, Directional derivatives, Line, Surface and Volume integrals, Stokes, Gauss and Green's theorems.</p> <p>Differential Equations: First order equations (linear and nonlinear), Higher order linear differential equations with constant coefficients, Cauchy's and Euler's equations, Initial and boundary value problems, Laplace transforms, Solutions of one dimensional heat and wave equations and Laplace equation.</p>
		<p>Complex variables: Complex number, polar form of complex number, triangle inequality. .</p> <p>Numerical Methods: Numerical solutions of linear and non-linear algebraic equations. Integration by trapezoidal and Simpson's rule. Single and multi-step methods for numerical solution of differential equations</p>

	M-2	Probability and Statistics: Definitions of probability and sampling theorems, Conditional probability, Mean, median, mode and standard deviation, Random variables, Poisson, Normal and Binomial distributions, Linear regression analysis.
General Aptitude (GA)	VA	English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction
	NA	Numerical computation, numerical estimation, numerical reasoning and data interpretation

Topic/Chapter wise test – 1st series

Each test carries 25 marks and 45 minutes duration

Test consists of 5 one mark questions and 10 two marks questions

Test No	Topic codes	Date of Activation
CH-01	GPLPC	02-06-2018
CH-02	GPLTD-1	05-06-2018
CH-03	GPLTD-2	07-06-2018
CH-04	GPLCT-1	11-06-2018
CH-05	GPLCT-2	14-06-2018
CH-06	GPLFM	17-06-2018
CH-07	GPLMO	20-06-2018
CH-08	GPLHT-1	23-06-2018
CH-09	GPLHT-2	26-06-2018
CH-10	GPLMT-1	29-06-2018
CH-11	GPLMT-2	02-07-2018
CH-12	GPLCRE-1	05-07-2018
CH-13	GPLCRE-2	08-07-2018
CH-14	GPLPDC-1	11-07-2018
CH-15	GPLPDC-2	14-07-2018
CH-16	GPLPD&ECO	17-07-2018
CH-17	GPLM1	26-07-2018
CH-18	GPLM-2	27-07-2018
CH-19	GPLVA	28-07-2018
CH-20	GPLNA	31-07-2018

Subject wise grand test – 1st series

Each test carries 50 marks and 90 minutes duration

Test consists of 10 one mark questions and 20 two mark questions

Test No	Subject codes	Date of activation
CH-21	GPLPD&TD	02-08-2018
CH-22	GPLFM&MO	06-08-2018
CH-23	GPLHT	09-08-2018
CH-24	GPLMT	13-08-2018
CH-25	GPLCRE	17-08-2018
CH-26	GPLPDC	21-08-2018
CH-27	GPLPD&ECO	25-08-2018
CH-28	GPLCT	29-08-2018
CH-29	GPLM	04-09-2018
CH-30	GPLGA	06-09-2018

Full length Mock test – 1st series

Each test carries 100 marks and 3 hours duration

Test No	Mock Gate Codes	Date of Activation
CH-31	PLMock-1	10-09-2018
CH-32	PLMock-2	14-09-2018
CH-33	PLMock-3	19-09-2018

Topic/Chapter wise test – 2st series

Each test carries 25 marks and 45 minutes duration

Test consists of 5 one mark questions and 10 two marks questions

Test No	Topic codes	Date of Activation
CH-34	GALPC	22-09-2018
CH-35	GALTD-1	24-09-2018
CH-36	GALTD-2	27-09-2018
CH-37	GALFM	30-09-2018
CH-38	GALMO	02-10-2018
CH-39	GALHT-1	04-10-2018
CH-40	GALHT-2	07-10-2018
CH-41	GALMT-1	09-10-2018
CH-42	GALMT-2	11-10-2018
CH-43	GALCRE-1	14-10-2018
CH-44	GALCRE-2	16-10-2018
CH-45	GALPDC-1	19-10-2018
CH-46	GALPDC-2	22-10-2018
CH-47	GALPD	25-10-2018
CH-48	GALECO	28-10-2018
CH-49	GALCT1&2	30-10-2018
CH-50	GALM-1	07-11-2018
CH-51	GALM-2	09-11-2018
CH-52	GALVA	11-11-2018
CH-53	GALNA	11-11-2018

Multi Subject grand test – 2st series

Each test carries 50 marks and 90 minutes duration

Test consists of 10 one mark questions and 20 two mark questions

Test No	Subject codes	Date of activation
CH-54	FM&MO,CRE	14-11-2018
CH-55	HT,MT	17-11-2018
CH-56	PC&TD,PDE	20-11-2018
CH-57	PDC&CT	23-11-2018
CH-58	EM	28-11-2018
CH-59	GA	29-11-2018

Full length Mock test – 2st series

Each test carries 100 marks and 3 hours duration

Test No	Mock Gate Codes	Date of Activation
CH-60	ALMock-1	30-11-2018
CH-61	ALMock-2	04-12-2018
CH-62	ALMock-3	09-12-2018

Multi subject Grand Test- 3rd series

Each test carries 50 marks and 90 minutes duration

Test consists of 10 one mark questions and 20 two mark questions

Test No	Subject codes	Date of activation
CH-63	PC&TD,FM&MO	13-12-2018
CH-64	HT,MT	17-12-2018
CH-65	CRE&CT	21-12-2018
CH-66	PDC&PDE	25-12-2018
CH-67	GM	01-01-2019
CH-68	GA	03-01-2018

Full length Mock test – 3st series

Each test carries 100 marks and 3 hours duration

Test No	Mock Gate Codes	Date of Activation
CH-69	Mock-1	05-01-2019
CH-70	Mock-2	08-01-2019
CH-71	Mock-3	11-01-2019
CH-72	Mock -4	15-01-2019
CH-73	Mock -5	19-01-2019
CH-74	Mock -6	25-01-2019