	COMBO ONLINE TEST SERIES				
	GATE 2019 SCHEDULE: MECHANICAL ENGINEERING				
Test Date	**Test Type**	**Syllabus** **[EB-Engineering Branch ; EM- Engineering Mathematics; GA- General Aptitude]**	**No. of Question**	**Marks**	**Duration**
01/07/2018	Minor Test -1	**EB-Engineering Mechanics:** Free body diagrams and equilibrium; trusses and frames; virtual work; kinematics and dynamics of particles and of rigid bodies in plane motion, including impulse and momentum (linear and angular) and energy formulations; impact.	33	50	90 min
08/07/2018	Minor Test - 2	**EB-Strength of Materials-I:** Stress and strain, stress-strain relationship and elastic constants, Mohr's circle for plane stress and plane strain, thin cylinders; shear force and bending moment diagrams;	33	50	90 min
15/07/2018	Minor Test - 3	**EM- Linear Algebra:** Matrix algebra, systems of linear equations, eigenvalues and eigenvectors. **Numerical Methods:** Numerical solutions of linear and non-linear algebraic equations; integration by trapezoidal and Simpson's rules; single and multi-step methods for differential equations.	33	50	90 min
18/07/2018	**GA: Minor Test- 1**	**Verbal Ability:** English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction. **Numerical Ability:** Numerical computation, numerical estimation, numerical reasoning and data interpretation.	33	50	90 min
22/07/2018	Minor Test - 4	**EB-Strength of Materials-II:** Bending and shear stresses; deflection of beams; torsion of circular shafts; Euler?s theory of columns; strain energy methods;thermal stresses.	33	50	90 min
29/07/2018	Minor Test - 5	**EB-Theory Of Machines and Vibrations:** Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of slider-crank mechanism; gear trains; flywheels. **Vibration:** Free and forced vibration of single degree of freedom systems; effect of damping; vibration isolation; resonance, critical speeds of shafts.	33	50	90 min
30/07/2018	**EM: Minor Test- 1**	**LINEAR ALGEBRA:** Matrix algebra, systems of linear equations, eigenvalues and eigenvectors. **CALCULUS:** Functions of single variable, limit, continuity and differentiability.	33	50	90 min
05/08/2018	Minor Test - 6	**GA:** General Aptitude(Language and Analytical Skills)	33	50	90 min

12/08/2018	Minor Test - 7	**EB-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, spur gears, rolling and sliding contact bearings, brakes and clutches.	33	50	90 min
15/08/2018	**GA: Minor Test- 2**	**Verbal Ability:** English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction. **Numerical Ability:** Numerical computation, numerical estimation, numerical reasoning and data interpretation.	33	50	90 min
19/08/2018	Minor Test - 8	**EB-Fluid Mechanics-I** Fluid properties; fluid statics, manometry, buoyancy; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation.	33	50	90 min
26/08/2018	Minor Test - 9	**EM-Calculus:** Functions of single variable, limit, continuity and differentiability. Mean value theorems, indeterminate forms; evaluation of definite and improper integrals; double and triple integrals; partial derivatives, total derivative, Taylor series (in one and two variables), maxima and minima, Fourier series; gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, applications of Gauss, Stokes and Green's theorems.	33	50	90 min
30/08/2018	**EM: Minor Test- 2**	**CALCULUS:** Mean value theorems, indeterminate forms; evaluation of definite and improper integrals; double and triple integrals; partial derivatives, total derivative, Taylor series (in one and two variables), maxima and minima, Fourier series; gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, applications of Gauss, Stokes and Green's theorems.	33	50	90 min
02/09/2018	Minor Test - 10	**EB-Fluid Mechanics-II and Turbo-Machinery** Viscous flow of incompressible fluids; boundary layer; elementary turbulent flow; flow through pipes, head losses in pipes, bends etc. Pelton-wheel, Francis and Kaplan turbines-impulse and reaction principles, velocity diagrams.	33	50	90 min
09/09/2018	Minor Test -11	**EB-Heat-Transfer** Modes of heat transfer; one dimensional heat conduction, resistance concept, electrical analogy, unsteady heat conduction, fins; dimensionless parameters in free and forced convective heat transfer, various correlations for heat transfer in flow over flat plates and through pipes; thermal boundary layer; effect of turbulence; radiative heat transfer, black and grey surfaces, shape factors, network analysis; heat exchanger performance, LMTD and NTU methods.	33	50	90 min

15/09/2018	GA: Minor Test- 3	**Verbal Ability:** English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction. **Numerical Ability:** Numerical computation, numerical estimation, numerical reasoning and data interpretation.	33	50	90 min
16/09/2018	Minor Test - 12	**GA:** General Aptitude(Language and Analytical Skills)	33	50	90 min
23/09/2018	Minor Test - 13	**EB-Thermodynamics** Zeroth, First and Second laws of thermodynamics; thermodynamic system and processes; Carnot cycle. irreversibility and availability; behaviour of ideal and real gases, properties of pure substances, calculation of work and heat in ideal processes; analysis of thermodynamic cycles related to energy conversion.	33	50	90 min
29/09/2018	EM: Minor Test- 3	**DIFFERENTIAL EQUATIONS:** First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; Euler-Cauchy equation; initial and boundary value problems; Laplace transforms; solutions of heat, wave and Laplace's equations.	33	50	90 min
30/09/2018	Minor Test -14	**EB- Thermodynamics-Applications** Power Engineering: Steam Tables, Rankine, Brayton cycles with regeneration and reheat. I.C. Engines: air-standard Otto,Diesel cycles. Refrigeration and air-conditioning: Vapour refrigeration cycle, heat pumps, gas refrigeration, Reverse Brayton cycle; moist air: psychrometric chart, basic psychrometric processes.	33	50	90 min
07/10/2018	Minor Test - 15	**EM-Differential equations:** First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; Euler-Cauchy equation; initial and boundary value problems; Laplace transforms; solutions of heat, wave and Laplace's equations. **Complex variables:** Analytic functions; Cauchy-Riemann equations; Cauchy's integral theorem and integral formula; Taylor and Laurent series.	33	50	90 min
14/10/2018	Minor Test - 16	**EB-Manufacturing Science-I** **Engineering Materials:** Structure and properties of engineering materials, heat treatment, stress-strain diagrams for engineering materials. **Metal Casting:** Design of patterns, moulds and cores; solidification and cooling; riser and gating design, design considerations. **Forming:** 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. **Joining:** Physics of welding, brazing and soldering; adhesive bonding; design considerations in welding.	33	50	90 min

15/10/2018	**GA: Minor Test- 4**	**Verbal Ability:** English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction. **Numerical Ability:** Numerical computation, numerical estimation, numerical reasoning and data interpretation.	33	50	90 min
21/10/2018	Minor Test - 17	**EM-Probability and Statistics:** Definitions of probability, sampling theorems, conditional probability; mean, median, mode and standard deviation; random variables, binomial, Poisson and normal distributions.	33	50	90 min
28/10/2018	Minor Test - 18	**EB-Manufacturing Science-II** **Machining and Machine Tool Operations:** Mechanics of machining, 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, principles of 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.	33	50	90 min
30/10/2018	**EM: Minor Test- 4**	**COMPLEX VARIABLES:** Analytic functions; Cauchy-Riemann equations; Cauchy's integral theorem and integral formula; Taylor and Laurent series. **NUMERICAL METHODS:** Numerical solutions of linear and non-linear algebraic equations; integration by trapezoidal and Simpson's rules; single and multi-step methods for differential equations.	33	50	90 min

Date	Test	Syllabus			
04/11/2018	Minor Test - 19	**EB-Industrial Engineering** **Production Planning and Control:** Forecasting models, aggregate production planning, scheduling, materials requirement planning. **Inventory Control:** Deterministic and probabilistic models; safety stock inventory control systems. **Operations Research:** Linear programming, simplex and duplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM.	33	50	90 min
11/11/2018	Minor Test -20	**GA:** General Aptitude(Language and Analytical Skills)	33	50	90 min
15/11/2018	**GA: Minor Test- 5**	**Verbal Ability:** English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction. **Numerical Ability:** Numerical computation, numerical estimation, numerical reasoning and data interpretation.	33	50	90 min
18/11/2018	Major Test - 1	**FULL SYLLABUS**	65	100	180 min
25/11/2018	Major Test - 2	**FULL SYLLABUS**	65	100	180 min
30/11/2018	**EM: Minor Test- 5**	**PROBABILITY AND STATISTICS:** Definitions of probability, sampling theorems, conditional probability; mean, median, mode and standard deviation; random variables, binomial, Poisson and normal distributions.	33	50	90 min
02/12/2018	Major Test - 3	**FULL SYLLABUS**	65	100	180 min
09/12/2018	Major Test - 4	**FULL SYLLABUS**	65	100	180 min
16/12/2018	Major Test - 5	**FULL SYLLABUS**	65	100	180 min
30/12/2018	Major Test - 6	**FULL SYLLABUS**	65	100	180 min
06/01/2019	Major Test -7	**FULL SYLLABUS**	65	100	180 min
13/01/2019	Major Test - 8	**FULL SYLLABUS**	65	100	180 min
20/01/2019	Major Test - 9	**FULL SYLLABUS**	65	100	180 min
27/01/2019	Major Test -10	**FULL SYLLABUS**	65	100	180 min

NOTE:

1. The above mentioned Dates are Opening Dates for Tests and each Test is valid till March 2019.