**Syllabus**

**Mid Exam 2019-2020**

**Semester: IV**

**Branch: Civil**

**Complex Numbers and Analytic Functions:**

* *Polar Form of Complex Numbers,*
* *Powers and Roots,*
* *Complex Variable – Differentiation : Differentiation,*
* *Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate*
* *Elementary analytic functions (exponential, trigonometric, logarithm) and their properties*
* *Conformal mappings,*
* *Mobius transformations and their properties.*

**Complex Variable Integration & Power Series:**

* *Contour integrals, Cauchy-Goursat theorem (without proof), Cauchy Integral formula (without proof).*
* *Liouville’s theorem and Maximum-Modulus theorem.*
* *Sequences, Series, Convergence Tests, Power Series, Functions Given by Power Series, Taylor and Maclaurin Series, Uniform Convergence.*

**Partial differential equations:**

* *First order partial differential equations,*
* *Solutions of first order linear and nonlinear PDEs, Charpit’s Method.*
* *Separation of variables method to simple problems in Cartesian coordinates, second-order linear equations and their classification.*