Date: 09/04/2019

**Summary Report on WIT & WIL**

**(Daily Report)**

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| **Name of the Faculty: Dr. J.Srinivas** | | | | **Name of Subject: LAODE** |
| **Class/Section: I B.Tech. II Sem/CE-2** | | | | |
|  | Grid Reference No.: | 6.2.1 | | | |
|  | Scenario Reference No.  (Mapping with Syllabus) | 4 | | | |
|  | Topic covered in every class | Series solution of Ordinary point | | | |
|  | **Brief write-up (500 words) for every class:**  **POWER SERIES** :  A power series   Typesetting:-mrow(Typesetting:-mo(**converges** at the point x = Typesetting:-mrow(Typesetting:-msub(Typesetting:-mi(if the infinite series (of real numbers)  Typesetting:-mrow(Typesetting:-mo(converges.  In general a power series converges absolutely for Typesetting:-mrow(Typesetting:-mfenced(Typesetting:-mrow(Typesetting:-mi(and diverges for Typesetting:-mrow(Typesetting:-mfenced(Typesetting:-mrow(Typesetting:-mi(**.**R is called the radius of convergence.  **Power Series Solutions to Linear Differential Equations.**   We now consider a method for obtaining a power series solution to a linear differential equation with polynomial coefficients.  Given the differential equation  Typesetting:-mrow(Typesetting:-msub(Typesetting:-mi(  we begin by writing it in the standard form  Typesetting:-mrow(Typesetting:-mi(and Typesetting:-mrow(Typesetting:-mi(  **Definition 1**  A point Typesetting:-mrow(Typesetting:-msub(Typesetting:-mi( is called an **ordinary point** of equation (1) if both p(x) and q(x) are analytic at Typesetting:-mrow(Typesetting:-msub(Typesetting:-mi( If it is not an ordinary point, it is called a **singular point** of the equation.  **Definition 2.**   A singular point Typesetting:-mrow(Typesetting:-msub(Typesetting:-mi( of  (2) is said to be a **regular singular point**if both Typesetting:-mrow(Typesetting:-mfenced(Typesetting:-mrow(Typesetting:-mi( and Typesetting:-mrow(Typesetting:-msup(Typesetting:-mfenced(Typesetting:-mrow(Typesetting:-mi( are analytic at Typesetting:-mrow(Typesetting:-msub(Typesetting:-mi(  Otherwise Typesetting:-mrow(Typesetting:-msub(Typesetting:-mi( is called an **irregular singular point.**  **Solutions about an ordinary point  x =** **Typesetting:-mrow(Typesetting:-msub(Typesetting:-mi(** We assume that a power series solution of the form  Typesetting:-mrow(Typesetting:-mi(exists and our task is to determine the coefficients This task is accomplished by substituting this series into the differential equation, combining the result into a single series by collecting the result in powers of x and then in order for this series to be identically zero, we must have that all of its coefficients must be equal to zero.    **Applications** | | | | |
|  | Relevant additional illustration if any: | |  | | |
|  | Video Links/ Web Links if any: | | <http://www.rmz-mg.com/letniki/rmz53/RMZ53_0261-0274.pdf>  <https://www.youtube.com/watch?v=3mKFtZl6ZZs> | | |
|  | Signature of Repository Administrator: | |  | | |