Enrollment Number: _____

P P SAVANI UNIVERSITY
P P SAVANI SCHOOL OF ENGINEERING
4th Semester of B. Tech. Examination (2nd Internal Exam)
Course: Mathematical Methods for Computation (SESH2051)
Branches: CE/IT

Date:08/03/2019, Friday] [Time:10:15 A.M. to 11.15 A.M.] [Total Marks:30]

Instructions :
- Figures to the right indicate full marks.
- All questions are compulsory.
- Use of scientific calculator is allowed.
- Assume suitable data if necessary.

Q.1 Answer the following. **[01]**

(i) $L(e^{at}\cosh bt) = ?$

(ii) $L\{f(at)\} = ?$

Q.2 Answer the following. **[04]**

(i) Prove $L\{\sinh at\} = \dfrac{a}{s^2 - a^2}$.

(ii) Find the Laplace transform of $t^2 - e^{-2t} + \cosh^2 3t$.

Q.3 Answer the following. [Attempt any five]. **[25]**

(i) Solve $(D^2 + 2D + 1)y = xe^{-x}\cos x$.

(ii) Solve $(D^2 - 5D + 6)y = x\cos 2x$.

(iii) Solve using Undetermined Coefficients $(D^2 - 2D)y = e^x \sin x$.

(iv) Solve $(D^2 - 3D + 2)y = \dfrac{e^x}{1 + e^x}$ using Method of Variation of Parameters.

(v) Solve $(D^2 - 2DD' + D'^2)z = tan(y + x)$.

(vi) Solve $z^2(p^2z^2 + q^2) = 1$.

(vii) Solve $25r - 40s + 16t = 0$.