# VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

## SCHOOL OF MECHANICAL ENGINEERING

**Continuous Assessment Test - I, August 2019**

**B.Tech (*BMA/BME/BEM*), Fall -2019-20**

**Class Nbr:** VL2019201001353

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|---|---|
| **Course Code** : MEE2050 | **Duration** : 90 Minutes. |
| **Course Name** : Vehicle Dynamics | **Max. Marks** : 50 |
| **Faculty-In-Charge**: Dr.K.Prabu | **Slot** : A1+TA1 |

**Answer all questions**

**Part A (2x10=20)**

1 Explain the basic terminologies to study the automotive vibration.

2 Compute the quarter car mathematical model and analysis the response for free vibration.

**Part B (2x15=30)**

3 Develop the single degree of freedom computational model of an automotive engine. Also analyze the effect of spring, damper, natural frequency and excitation force on vertical coordinate.

4 Derive the mathematical model for load distribution when the vehicle is rest for following condition

- Three wheel vehicle
- Four wheel vehicle