SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI

Summer Examination 2020 (Backlog)

HVPM's College of Engineering and Technology, Am avati

First Year Engineering Department

Bachelor of Engineering Semester – I and II

Subject : Engineering Mechanics **Code : IA3**

Instructions :

1. Solve any two questions
2. All questions carry equal marks

Q1.

a) State Three Force Principle. (02)
b) Assumptions of Analysis of Truss (02)
c) Define Moment of Inertia (02)
d) Define Range of Projectile Motion with diagram. (02)
e) State Newton's Second Law of Motion. (01)
f) Define Impulse (01)

Q2.

a) Resolve the Force of 20 KN along x and y components if it makes an angle of 30° with Y axis. (02)
b) State Coulomb's laws of Friction. (02)
c) Moment of Inertia for rectangle about Centroidal Axis. (02)
d) State equations of motion. (01)
e) State D'Alembert's Principle. (02)
f) State Work Energy equation for Rectilinear Motion. (01)

Q3.

a) State Lami's Theorem and its limitations. (02)
b) Define Perfect Truss. (01)
c) Explain Parallel axis Theorem. (02)
d) Calculate the velocity of car starting from rest and with acceleration of 1 m/s^2 after 1 sec. (02)
e) State Conditions of Dynamic Equilibrium. (02)
f) State Impulse Momentum equation. (01)

Q4.

a) Define Free body diagram. (01)
b) Define angle of Friction and angle of Repose. (02)
c) Calculate Moment of Inertia of Circle of radius 1m about centroidal axis. (02)
d) Calculate the equations for velocity and acceleration if $S = 2t^2$. (02)
e) Define Inertia Force. (01)
f) Define Kinetic and Potential Energy. (02)