

Day & Date: 07/11/2023  
Period: 2 hours  
Total pages : 02

Total Marks: 50  
Time : 02.30 to 04.30

**Q. 1) Select the most correct alternative.**

**(10)**

- i) The Process of determining the resultant of number of vector is called .....  
a) Vector resolution b) Vector Addition c) Vector Multiplication d) Vector Division
- ii) The triangle law of vector addition can be used to find the resultant of .....  
a) Only two vector b) Parallel Vectors c) unit vectors only d) more than two vectors
- iii) The number of independent variables in an ordinary differential equation is .....  
a) 1 b) 2 c) 3 d) 4
- iv) The equation  $\frac{dy}{dx} = \sin x$  is .....  
a) linear b) non-linear c) homogeneous d) first order non-linear
- v) ordinary differential equation involves .....  
a) only dependent variable b) only independent variables c) total derivatives d) partial derivative
- vi) The time rate of change of linear momentum is .....  
a) Linear acceleration b) angular acceleration c) force d) torque
- vii) Moment of inertia I rotational motion is analogous to the ..... in translational motion.  
a) Momentum b) mass c) force d) torque
- viii) The magnitude of the resultant of two unit vector  $\vec{q}$  and  $\vec{j}$  is .....  
a) 0 b)  $\sqrt{2}$  c) 2 d)  $\sqrt{3}$
- xi) The state of rest also a state of uniform motion with zero  
a) mass b) acceleration c) velocity d) momentum
- x) Non-inertial frame of reference is.....frame of reference  
a) acceleration b) unaccelerated c) inertial d) mechanical

**Q. 2 Attempt any two. (SA<sub>1</sub>)**

**(20)**

- 1) State the explain law of parallogram of vector addition.
- 2) Define second order homogeneous differential equation with constant coefficients.
- 3) State and prove law of conservation of linear and ongular of particle.

**Q.3. Attempt any Four. (SA<sub>2</sub>)**

**(20)**

- 1) State and explain the triangle law of vector addition.
- 2) State some charactecterstic of vector addition.
- 3) what is differential equation ? diffine order, degree and linearity of a differential equation.
- 4) State and prove work energy therom.
- 5) Stae and prove law of conservation of energy of system of particle.