

Quarterly Examination Model Question Paper - 2022

Class- XI
Subject-Physics

Time – 3 Hrs
Mark-70

PART-I

Choose the correct answer.

15×1=15

- An object of mass 10 kg is hanging on a spring scale which is attached to the roof of a lift. If the lift is in free fall, the reading in the spring scale is
a) 98 N b) zero c) 49 N d) 9.8 N
- The length of body is measured as 3.51m. if the accuracy is 0.01 mm then the percentage error in the measurement is
a) 351%. b) 1% c) 0.28% d) 0.035%
- The SI unit of length
a) metre b) centi metre c) kilometers d) mass
- Which one of the following physical quantities cannot be represented by a scalar
a) mass. b) length. c) momentum. d) magnitude of acceleration
- If a particle executes uniform circular motion in the xy plane in the clockwise direction then the angular velocity is in
a) positive y direction. b) positive z direction.
c) negative z direction. d) negative x direction
- If a particle is moving along a curved path in a plane then it is said to be in
a) Two dimensional motion b) one dimensional motion
c) Three dimensional dimensional motion d) all of the above
- If a particle has a negative velocity and negative acceleration it's speed
a) increase b) decrease c) remain same d) zero
- When a car moving on a circular track the centripetal force is given by..... The road and tires
a) electrostatic force b) magnetic force. c) normal force d) above all are wrong
- When a car takes a sudden left tune in the curved road .passenger are towards the right due to
a) inertia of direction b) inertia of motion. c) inertia of rest. d)absence of inertia
- Force acting on the particle moving with constant speed is
a) always zero b) need not be zero c) always non zero d) cannot be concluded
- If a person moving from pole to equator, the centrifugal force acting on him ____
a) increases b) decreases c) remains the same d) increases and then decreases
- A body of mass 1 kg is thrown upwards with a velocity 20 ms^{-1} . It momentarily comes to rest after attaining a height of 18 m. How much energy is lost due to air friction?
a) 20 J b) 30 J c) 40 J d) 10 J
- The work done by a conservative force for a closed path always
a) negative b) zero c) always positive d) not defined
- Couple produces
a) pure rotation b) pure translation
c) rotation and translation d) no motion
- The centre of mass of the system of particle does not depend upon
a) position of particle. b) mass of particle
d) force acting on a particle d) all of the above

PART -II

Answer the following question.(Question no 19 is compulsory)

6×2=12

- Define torque and mention its unit
- Define centre of gravity

18. Define the gravitational field. Give its unit.
19. Under the What condition will a car skid on a levelled circular road?
20. What are the conditions in which force cannot produce torque?
21. Write down the Kinetic equation for angular motion
22. Write a short note on vector product between two vectors
23. Define scalar give example
24. State Newton's second law?

PART-III

Answer the following question .(Question no 27 is compulsory)

6×3=18

25. State Kepler's three laws.
26. Briefly explain rolling friction
27. A force of $(+4i -3j +5k)$ N is applied at a point whose position vector is $(+7i +4j -2k)$ m
Find the torque of force about the origin passing through its centre and perpendicular to its plane.
28. What are the limitations of dimensional analysis?
29. Define velocity and speed.
30. Using free body diagram show that it is easy to pull an object than push it
31. Explain the loss of kinetic energy in inelastic collision.
32. What is non uniform circular motion?
33. Write a short note on the scalar product between two vectors

PART - IV

Answer the following all question.

5×5 =25

34. a) State Newton's three laws and mention its significance.
OR
b) Discuss the properties of vector product of two vectors.
35. a) Explain detail in triangular law of addition
OR
b) Derive the equation of motion for a particle falling vertically and projected vertically
36. a) Explain the motion of blocks connected by a spring in vertical motion
OR
b) Explain the need for banking of tracks
37. a) Derive the kinematics equation of motion for constant acceleration.
OR
b) State and prove parallel axis theorem.
38. a) Explain why a cyclist bends while negotiating a curved road ?
OR
b) State and explain work energy principle mention any three example for it