

DAILY TEST SERIES FOR IIT-JEE 2009 FROM VIDYA DRISHTI

01.04.2009

Total time: 20 min

Assertion-reason type

Physics

- Statement 1: A body is lying at rest on a rough horizontal surface. A person accelerating with acceleration $a\hat{i}$ where \hat{i} is along the horizontal direction, observes the body. With respect to him, the block experiences a kinetic friction.
Statement 2: whenever there is a relative motion between the rough contact surfaces then kinetic friction acts.
- Statement 1: A mirror cannot give a chromatic aberration but can give rise to spherical aberration, whereas a lens can give rise to both.
Statement 2: A lens has two refracting surfaces.

Chemistry

- Statement 1: C – Cl bond in vinyl chloride is stronger than in chloroethane.
Statement 2: Vinyl chloride has resonance effect whereas chloroethane has pure single, sigma covalent bond.
- Statement 1: An alkyne is more reactive than alkene in catalytic hydrogenation reaction while reverse is true for electrophilic addition reaction.
Statement 2: Catalytic addition involves formation of a carbocation intermediate, stability of which control the reactivity. On the other hand, electrophilic addition involves adsorption of unsaturated compounds on the metal surface, which is restricted by the bulky substituent at unsaturated carbons.

Mathematics

- Statement 1: Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be a function such that $f(x) = x^3 + x^2 + 4x - \cos x$. then f is one-one.
Statement 2: $f(x)$ is decreasing function.
- Statement 1: If $y^2 = 4 + 3x - x^2$, then at $(4, 0)$ & $(-1, 0)$ tangent is perpendicular to x-axis.
Statement 2: Slope of the curve is not defined at these two points.

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SOLUTION:

1. (d)
2. (c)
3. (a)
4. (d)
5. (c)
6. (a)

Try to explain yourself.