

Question

STATEMENT-1

An astronaut in an orbiting space station above the Earth experiences weightlessness.

and

STATEMENT-2

An object moving around the Earth under the influence of Earth's gravitational force is in a state of free-fall.

- STATEMENT-1 is True, STATEMENT-2 is True; STATEMENT-2 is a correct explanation for STATEMENT-1
- STATEMENT-1 is True, STATEMENT-2 is True; STATEMENT-2 is NOT a correct explanation for STATEMENT-1
- STATEMENT -1 is True, STATEMENT-2 is False
- STATEMENT -1 is False, STATEMENT-2 is True

Solution

Correct option is A)

For the body to follow circular path, there must be a centripetal force. Here the astronaut is inside a satellite which is revolving around the earth under the influence of earth's gravitation. Thus, the earth's gravitation acts as centripetal force and the net force on astronaut is zero. Statement 2 is right explanation of 1.