

→ Previous cycle but of smaller amplitude. This happens when the frictional force is proportional to the velocity of the system.

Forced Oscillations → When a body is set in oscillation under an external periodic force, then in the beginning the body tries to oscillate with its own natural frequency, but very soon these oscillations die out and the body oscillates with the frequency of the external applied force. Such oscillations are called forced oscillations. The amplitude of the forced oscillation depends upon the relation between the frequency of the applied force and the natural frequency of the body.

Example : — when a tuning fork is struck and its stem is placed on table, the table is set in oscillation with the frequency of the fork. Similarly when an alternating current is passed through a stretched string held between the poles of magnet, the string oscillates with the frequency of the current. These oscillations of the string are called the forced oscillations.

Resonance : — when a body is set in to oscillations by an external periodic force of the same frequency as the natural frequency of the body, the amplitude of oscillation is very much increased. This phenomenon is called "resonance".

Thus the resonance is a special case of forced oscillation.