Formation of Waterfalls| sample answer

Q. *'Explain with the aid of a labelled diagram(s) the formation of one landform of erosion that you have studied'* (2013 Q2 b(i))

A waterfall is a cascade of falling water where there is a vertical or almost vertical drop in the river's course. Waterfalls are found in the youthful stage of a river because the water is flowing the fastest and with the most power. Gravity gives water this power and speed as it forced the river to flow down the mountain.
Most waterfalls develop where a river meets a band of softer, less resistant rock like limestone, after flowing over a harder, more resistant rock like granite
As a result of differential erosion, the soft rock on the downstream side is eroded at a faster rate and a fall (drop) develops as the river bed is steepened where the 2 rocks meet.
When the water approaches the fall, it increases in speed because the water in front of it is freefalling, this makes hydraulic action more effective.
The underlying softer rock is worn away as the water drops onto it. Over a period of time the hard rock is undercut, becomes unstable and collapses, this is called an overhang.
The rock that has collapsed to the bottom of the fall is swirled around in an eddying action and uses abrasion to widen and deepen the food of the waterfall
The force of falling water increases the size and depth of the hollow at the bottom of the fall. Also the falling water is unhindered by friction and therefore its velocity and hence the power to erode are increased.
This carves out a deep hollow called a plunge pool. The falling water splashed against the back of the water dissolving some of it by soulution. The splash back creates a cave behind the waterfall, leaving an overhang of hard rock above it.
As the underlying rock erodes, the overhang collapses. This process of undercutting and collapse are repeated many times, causing the waterfall starts to retreat upstream, leaving steep sided gorge downstream from the waterfall.
An irish example is Torc waterfall in Killarney, Co. Kerry.
Waterfalls do not necessarily form from where there is sort rock and hard rock, sometimes waterfalls can be created because of glaciation and glacial valleys, Pollanauss, Co. Wicklow is an example of a hanging valley waterfall.
Waterfalls are temporary features and eventually they become rapids and disappear from the landscape. For example the Niagara falls retreats by 1 meter per year.
Waterfalls may also be formed by river rejuvenation and after mark the knick point of intersection between the old and new river profile.

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