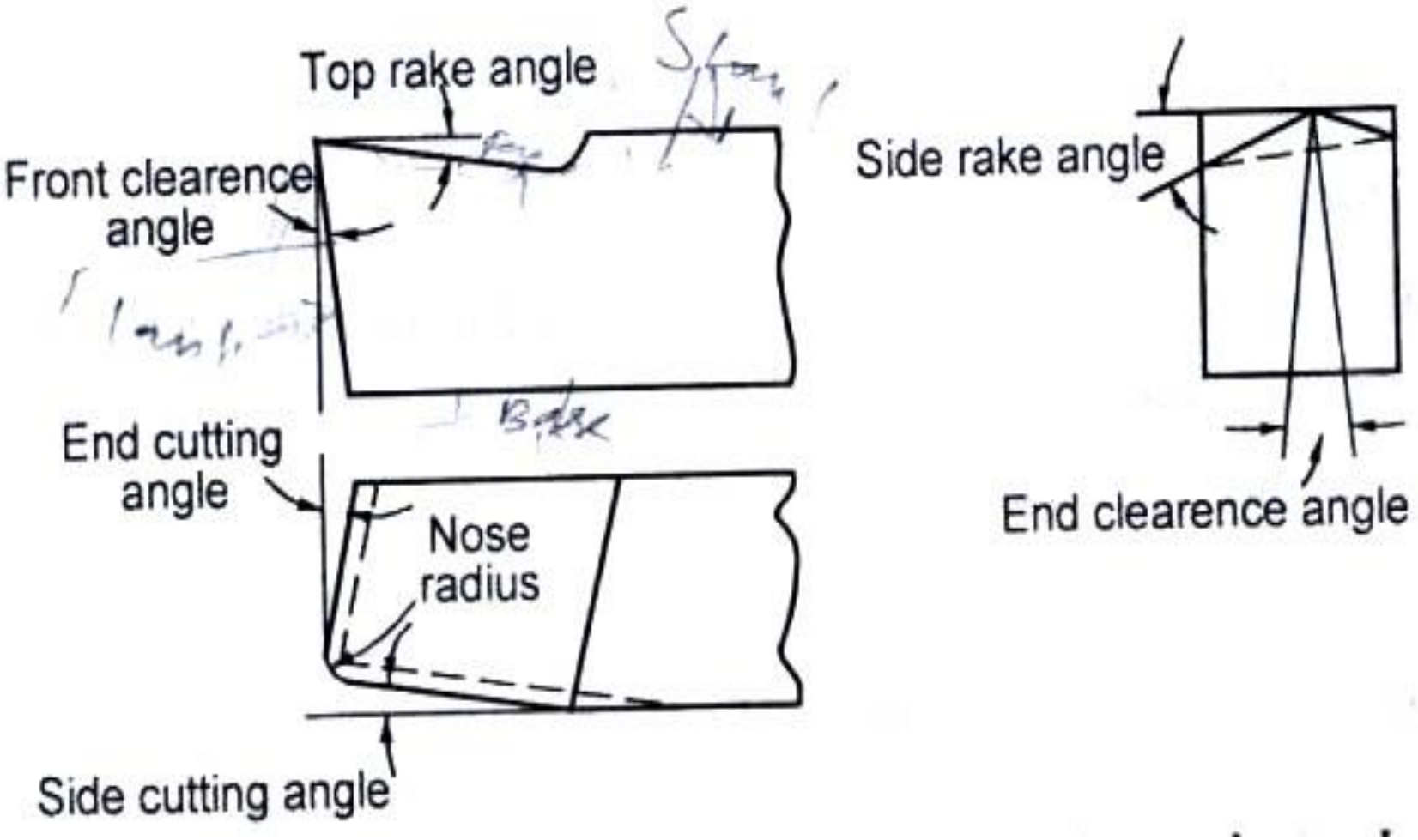
SINGLE POINT CUTTING TOOL



1. Parts of a single point cutting tool

(i) Shank:

The body of the tool which is not grained is called as *shank*.

(ii) Face:

The surface over the chip of the metal slides is known as *face*.

(iii) Flank:

The surface of the tool which is facing the work piece is known as *flank*. In single point cutting tool, generally there are two flanks namely end flank and side flank.

(iv) Base:

It is the bottom surface of the shank. Generally, it is flat in nature.

(v) Nose:

The junction of sides and end cutting edges are called *nose*.

(vi) Cutting edge:

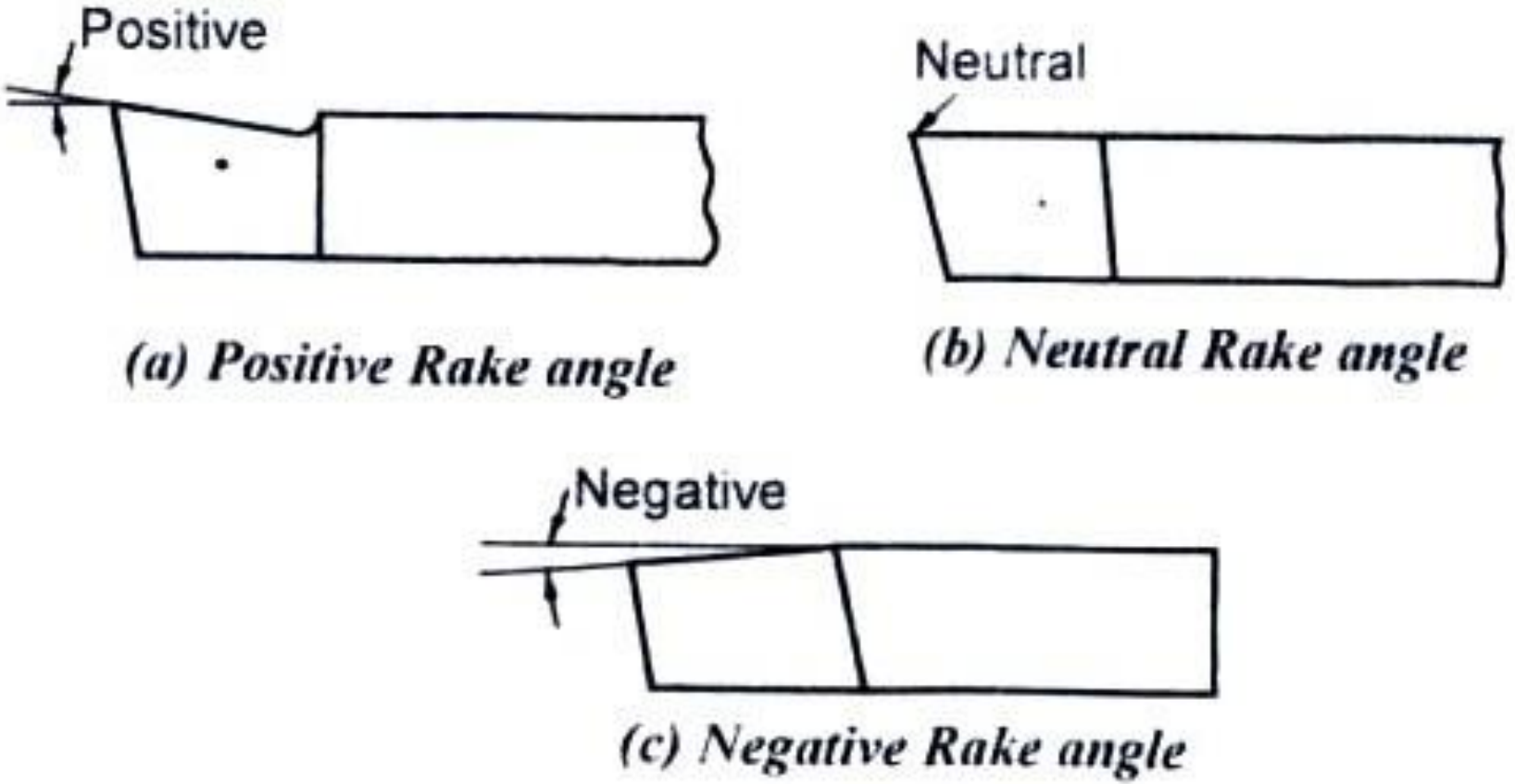
It is the junction of face and flank. It is generally denoted by two types of cutting edges.

1. End cutting edge
2. Side cutting edge

2. ANGLES OF SINGLE POINT CUTTING TOOL:

- ✓Back rake angle
- ✓Side rake angle
- ✓Relief angle or Clearance angle
  - ✓Side relief angle
  - ✓End relief angle
- ✓Cutting edge angle
- ✓Nose radius

3.EFFECTS OF BACK RAKE ANGLE:



(a) Positive Rake angle

(b) Neutral Rake angle

(c) Negative Rake angle

Fig. 1.2 Various rake angles in cutting tool

When will be the positive rake angles used?

(i) To machine the work hardened materials.

(ii) To machine low strength ferrous and non-ferrous metals.

(iii) To turn the long shaft of smaller diameters.

(iv) To machine the metal having lesser recommended cutting speeds.

(v) To machine the workpiece using small machine tools with low horsepower.

When will be the negative rake angles used?

(i) To machine high strength alloys.

(ii) The machine tools are more rigid.

(iii) The feed rates are high.

(iv) To give heavy and interrupted cuts.