



Ques 2: Modes of optical fibres :-

① Single Mode fibres

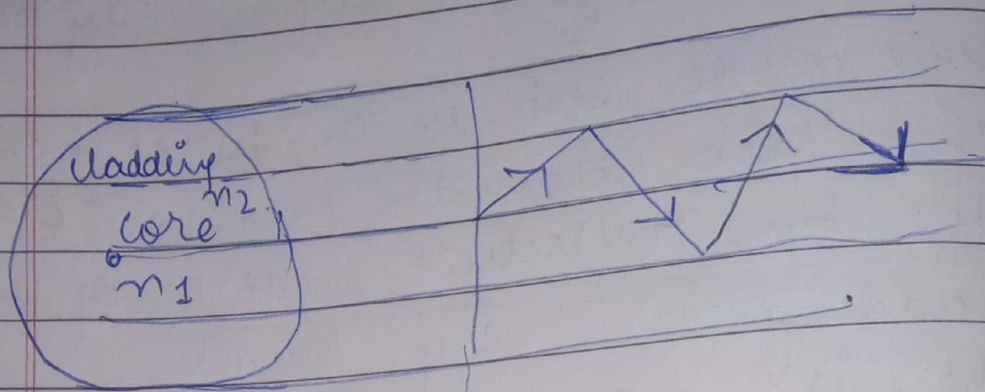
- There is only one way for ray propagation
- Single mode step index fibres have less core diameter ($< 10 \mu\text{m}$) & the diff. b/w refractive indexes of core & cladding is very small.
- There is no dispersion
- fabrication cost is very high
- suitable for long-distance communication

② Multimode fibres :-

- In multimode fibres, large No. of paths are available
- larger core diameter (50 to 200 μm) & diff. b/w cladding & core is large.
- Signal distortion & dispersion takes place
- Less suitable for long distance communication
- fabrication cost is less.

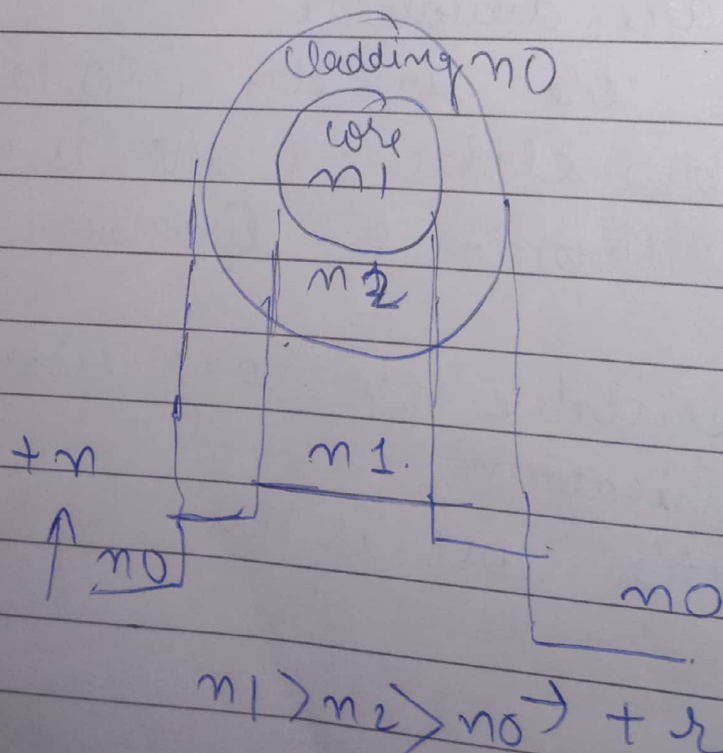
→ propagation of light in single mode

① only one Ray can enter the core & get guided By T-I-R.

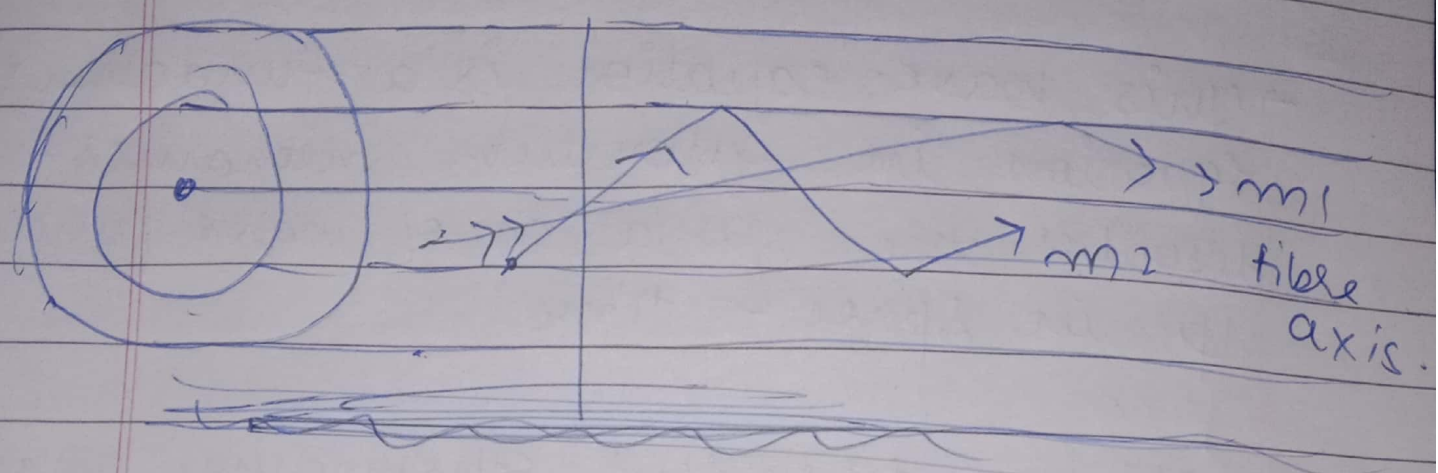


→ ② in Multimode.

→ consists of core material surrounded by a concentric layer of cladding material with n_2 .



→ different Rays of light



→ (3) in Graded Index fibre.

→ Light Rays periodically diverge & converge along length of fibre

