

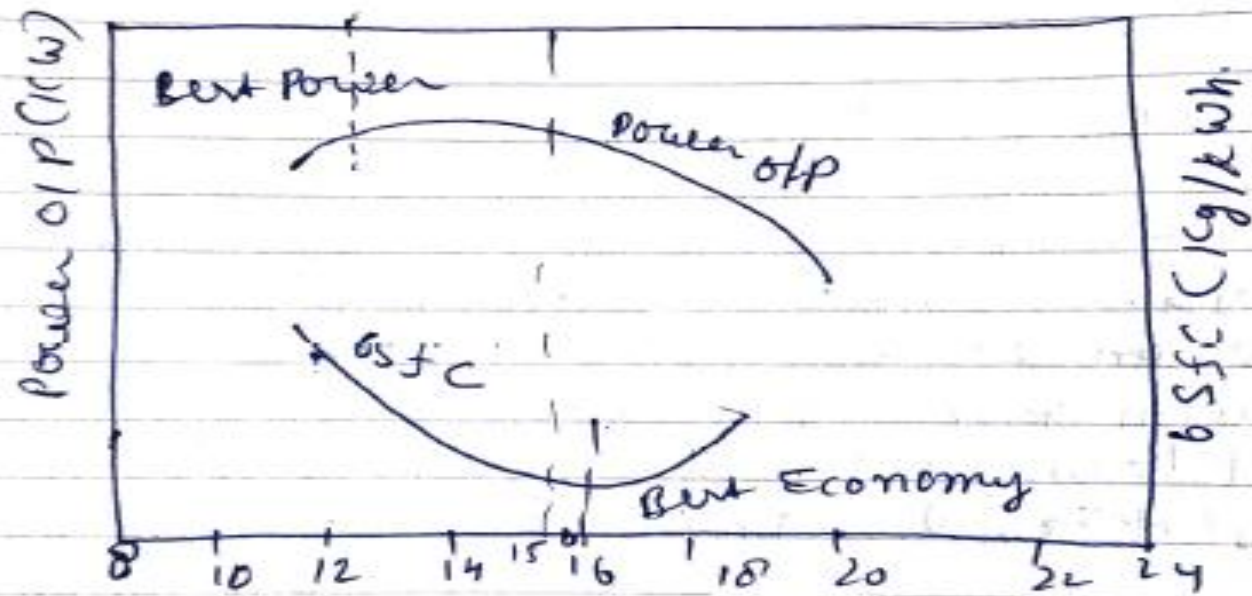
Various Load -

Idling / Starting \rightarrow Engine runs
without load, produces power
only to overcome friction
6/w - the parts.

Normal Power / Cruising \rightarrow Engine runs
for most of the period, therefore fuel
Economy is maintained. Low
fuel consumption for maximum
Economy, requires a lean mixture.

Maximum Power / Acceleration \rightarrow Overtaking a
vehicle (short period) or climbing up a
hill (Extra load) requires a rich mixture.

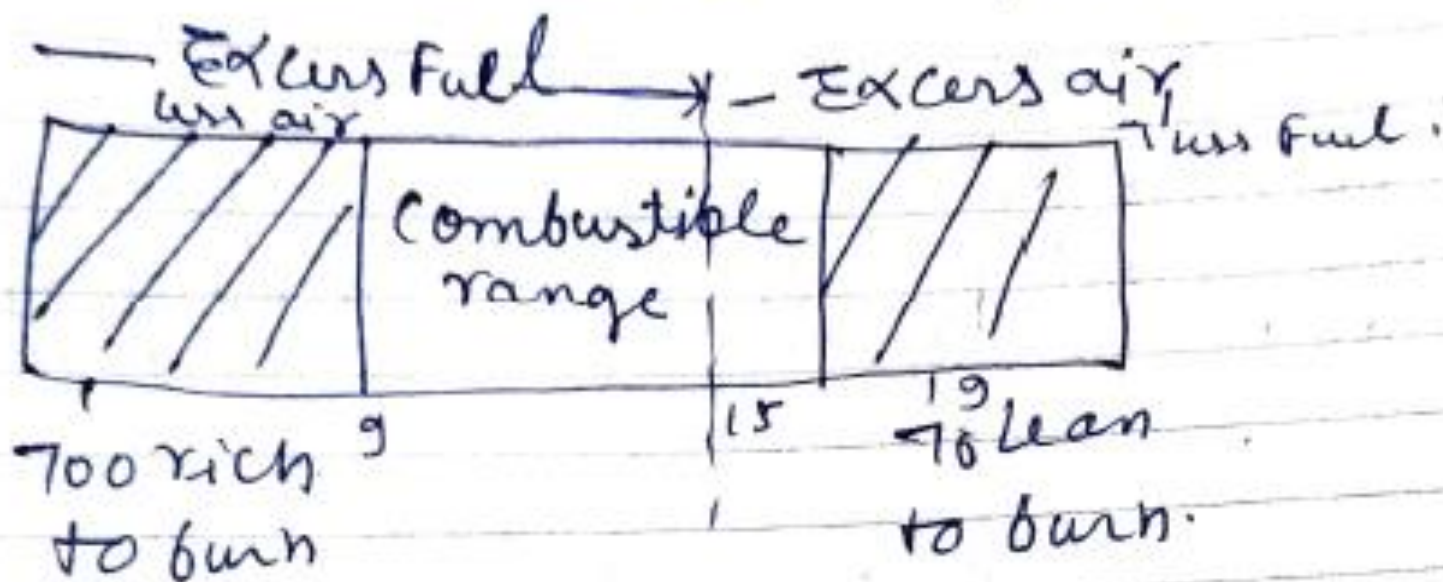
Variation of Power output and SFC with A/F ratio in SI Engine



A/F ratio (kg of air / kg of fuel)

Air fuel mixture

Chemically correct	15:1
Rich mixture	10:1
Lean mixture	17:1



Starting a cold Engine

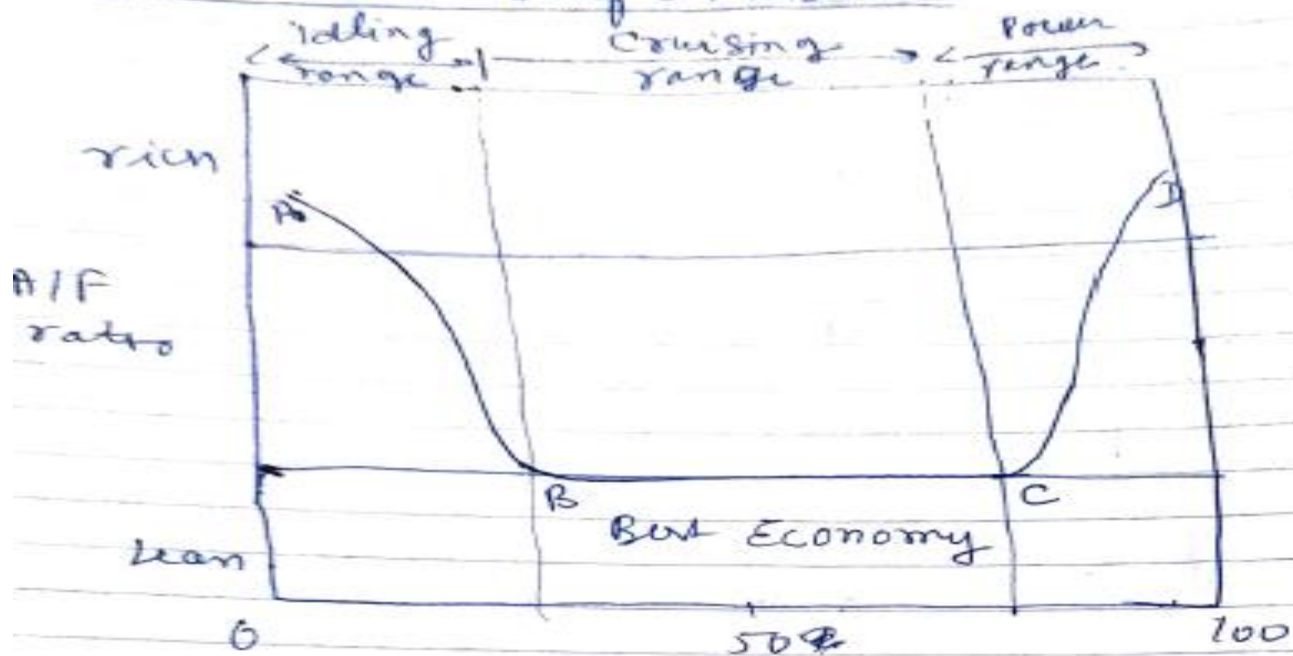
When an engine is cold a very small % of fuel will vaporize in take and compression process, the fuel is cold and much more viscous, creating a lower flow rate. The engine metal parts are cold and inhibit vaporization.

Starting a cold Engine

When an engine is cold a very small % fuel will vaporize. Intake and compression strokes, the fuel is cold and much more viscous, creating a lower flow rate. The engine metal parts are cold and inhibit vaporization.

Further during the compression stroke cold cylinder walls will absorb heat and reduce vaporization. Engine lubrication is cold and more viscous making the engine turn more slowly in the starting process.

Carburetor Performance



Throttle opening (%)

< 40 km (rich mixture) Fuel more.
 > 40 km. Fuel less lean mixture.