

* Power Plant *

- Gas Turbine
- Air compressor
 - Reciprocating
 - Centrifugal
 - Axial
- Rankine or Vapour power cycle.
- Thermal Power Plant.
 - Steam turbine
 - Boiler
 - Condenser & cooling Tower.
- Jet Propulsion.

Gate $\frac{4 \text{ to } 5}{70}$ Marks

ESE $\frac{40-50}{200}$ up to last year

Conv. = $\frac{60 \text{ to } 70}{280}$

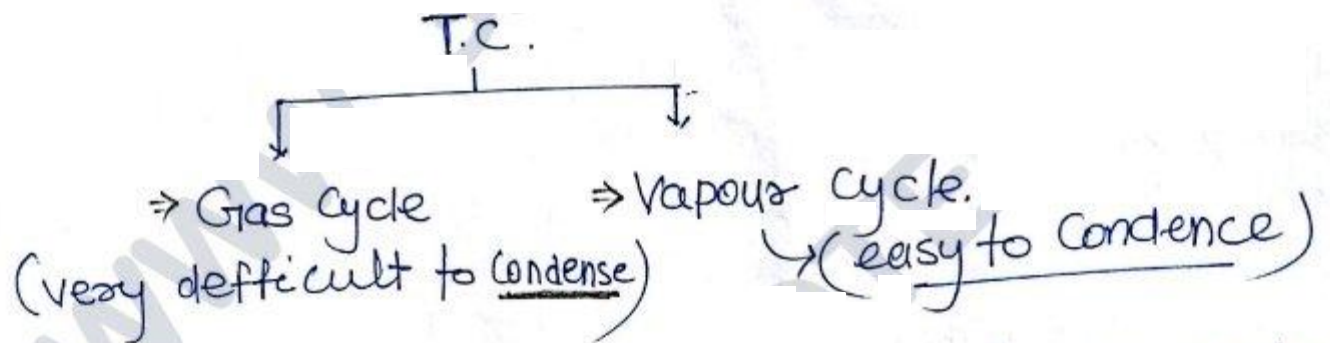
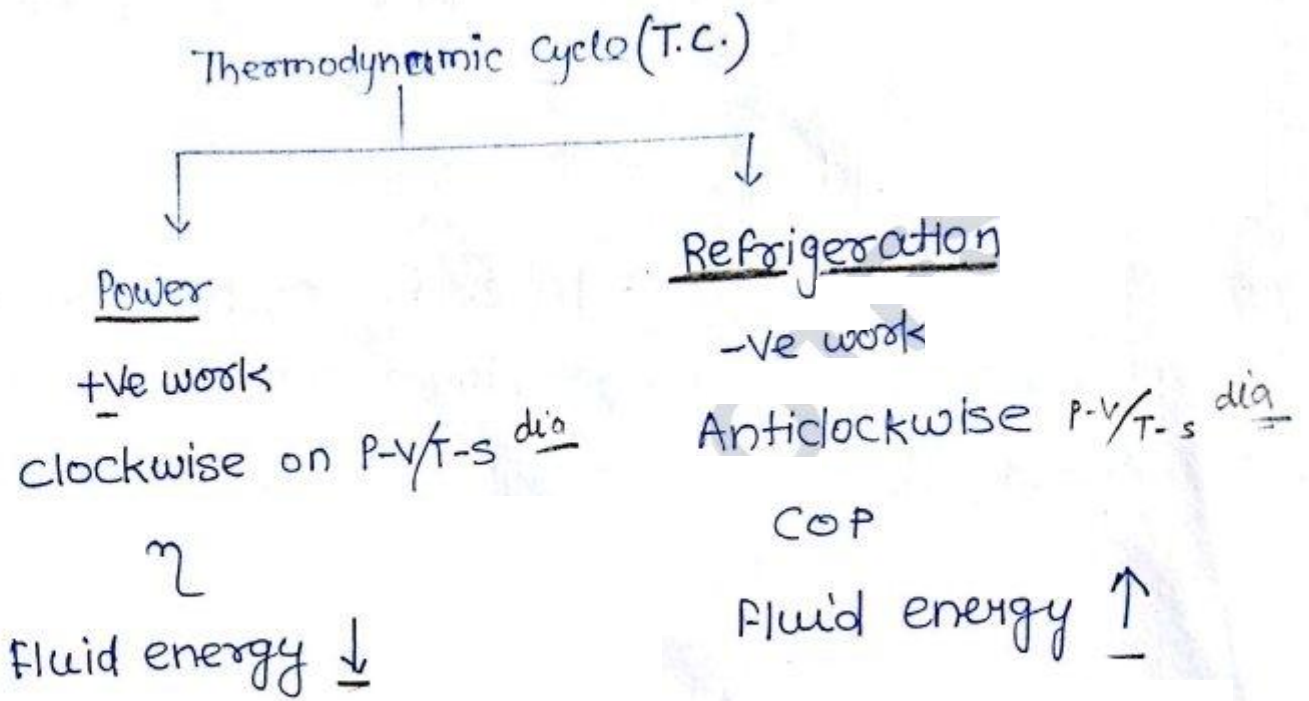
Not in Gate.

only for ESE

Gas turbine - V. Ganeshan

Power plant engg. - P.K. Nag.

Power plant engg. - R. Yadav.



Gas Cycle! working substance remain in single gaseous phase through the cycle

Vapour cycle: working substance remain in liquid phase for the half cycle and in the vapour phase for next half cycle.

T. C.

Steam turbine: stainless steel, Ti alloy
Gas turbine: Nickel based super alloy

open cycle

Closed Cycle.

- In every cycle fresh working substance is used and exhausted.

- In every cycle the same working substance is again & again re circulated.

	Steam P.P. (60%)	Gas Turbine P.P. (10-12%)	(Generator) I.C. Engine P.P. (1-2%)
Cycle	Rankine	Brayton	Diesel or Otto
Fuel	Coal, HSD (High speed diesel), paraffin oil etc.	Natural Gas, Methane, ethane etc.	Diesel, Petrol kerosene etc.
Max. Temp.	620°C	1300°C	2500°C
Pressure Ratio	180-300	10-12	15-25
Weight/Power	55 kg/kw	20 kg/kw (used in aircraft)	115 kg/kw
efficiency	35% to 37%	22 to 27%	27% to 32%
Pollution	Highest	least	Medium.
Installation	3 to 4 year 200 MV	2 to 3 yrs 200 MV	1 to 2 months 1-2 MV.