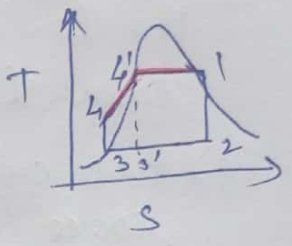
Vapour Power Cycle

1. The recommended cycle for a steam power plant is
   a) Brayton cycle b) Rankine cycle c) Carnot cycle d) None

2. For the same maximum temperature in cycle the avg. temp. of heat addition of a Rankine cycle compared to that of Carnot cycle is :



$T_{Avg\ for\ carnot} = \frac{T_{4'} + T_1}{2}$

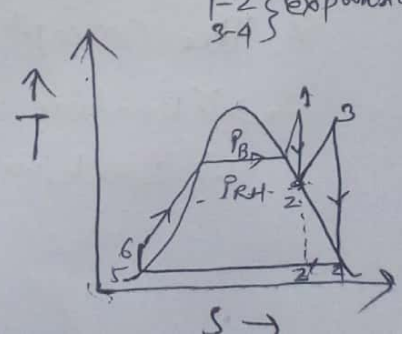
$T_{avg\ for\ rankine} = \frac{T_4 + T_1}{2}$

   a) Same b) not related c) higher d) lower

3. The difference between the temperature of superheated steam and the liquid vapour saturation temperature at the corresponding pressure is known as
   a) the extent of superheat b) the limit of superheat
   c) the approach of superheat d) degree of superheat

4. If a re-heater is added to a Rankine cycle, then usually
   a) the net work and efficiency decreases
   b) the net work increases & efficiency remains same
   c) the net work and efficiency increases
   d) the net work remains same and efficiency increases

$\eta = \frac{WD\uparrow}{\text{Heat Supply}}$



5. ~~If a r~~ In a cross compound steam engine —

a) One high and one low pr. cylinder are set side by side, driving the same shaft, cranks being set 90° apart

b) two cylinders are centered on the same piston rod, the low pressure cylinder being placed nearest the crankshaft.

c) two cylinders are set at 90°, usually to save floor space

d) None

6. Which combination of the following statements is correct ? The incorporation of re-heater in steam power plant.

A) Always (not always) increases the thermal efficiency of the plant

B) Always increases the dryness fraction of the steam at condenser inlet $\uparrow \boxed{x = \frac{m_v}{m_v + m_l}}$

C) Always increases the mean temp. of heat addition.

D) Always increases the specific work-output.

a) A, D only b) B, D only

7. The overall efficiency of thermal power plant is —

a) Boiler efficiency, turbine efficiency & generator efficiency

$$\eta_0 = \eta_B \times \eta_T \times \eta_{Generator}$$

8. The concept of regeneration is used in which cycles?

a) Rankine and Stirling b) Sterling & Ericsson

b) Rankine & Ericsson d) Stirling & Brayton

9. The solid fuel having the highest calorific value is a) wood b) lignite c) coke
d) anthracite

10. value of dryness fraction (in %) represents the dry saturated state of vapour?
a) 0 b) 25 c) 50 d) 100

$$x = \frac{m_v}{m_v + m_L}$$

11. In cooling towers, water is cooled by the process of
a) condensation b) fusion c) Evaporation
d) sublimation

12. The dry saturated steam at very low pressure (5-10 kg/cm²) when throttled (expansion) to atmosphere will become
a) wet b) super-heated c) remain dry saturated
d) dry

13. An ideal regenerative cycle is
a) equal to carnot cycle b) less than carnot cycle
c) more than carnot cycle d) could be anything

14. Filling or decking (→ increase surface area) in a cooling tower increases the rate of heat transfer by providing
a) increased flow of water
b) increased flow of air
c) increased flow of water and air
d) a large amount of wetted surface

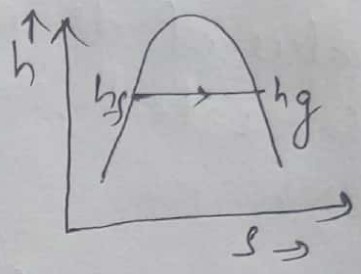
15. Which equation represents the actual enthalpy of evaporation?

a) $h_{fg} = x h_{fg}$ b) $h_{fg} = h_f + x h_{fg}$

c) $h_{fg} = h_f - x h_{fg}$ d) $h_f = h_g - x h_{fg}$

$$h_g = h_f + x h_{fg}$$

$$h_f = h_g - x h_{fg}$$



16. Steam engine operates on → Rankine cycle

a) Carnot cycle b) Joule cycle

c) Stirling cycle d) None

17. In cooling tower, water is cooled by the process of a) condensation b) fusion c) Nodular d) Sublimation

19. The Rankine cycle will approach to carnot cycle is

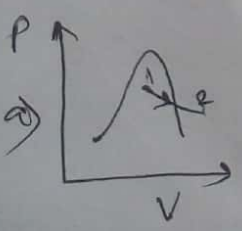
a) The no. of regenerators are increased

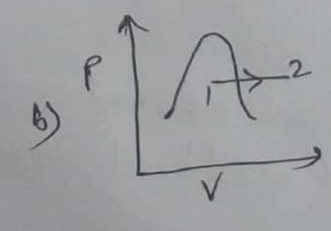
b) the no. of reheaters are decreased

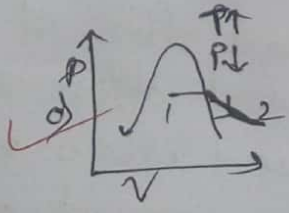
c) the no. of reheaters are increased

d) None of these

20. Which of the following curve is true for the isothermal process for wet steam to get converted to superheated steam?

a) 

b) 

c) 

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