

## 4. Entropy

1. The Clausius equation for a reversible cycle is :- (CHATT-08)
- (a)  $\oint \frac{dQ}{T} < 0$  (b)  $\oint \frac{dQ}{T} = 0$  (c)  $\oint \frac{dQ}{T} > 0$  (d)  $\oint \frac{dQ}{T} \leq 0$
2. Change in entropy for a natural process will always be :- (UKD-08)
- (a) zero (b) Positive (c) Negative (d) None
3. Which of the following is the expression for Joule-Thomson coefficient? (where symbols have their usual meaning) (UP-14)
- (a)  $\left(\frac{dT}{dP}\right)_h$  (b)  $\left(\frac{dh}{dP}\right)_t$  (c)  $\left(\frac{dh}{dt}\right)_p$  (d)  $\left(\frac{dP}{dt}\right)_h$
4. The latent heat of evaporation of water at  $100^\circ\text{C}$  is  $2560\text{K}$ . What is the change of entropy associated with the evaporation. (SSC-14)
- (a)  $25 \times 10^3 \text{KJ/Kg-K}$  (b)  $6.86 \text{KJ/Kg-K}$  (c)  $-25.6 \text{KJ/Kg-K}$  (d)  $25.6 \text{KJ/Kg}$
5. For an irreversible thermodynamic cycle :- (SSC-13)
- (a)  $\int \frac{dQ}{T} > 0$  (b)  $\int \frac{dQ}{T} < 0$  (c)  $\int \frac{dQ}{T} \geq 0$  (d)  $\int \frac{dQ}{T} \leq 0$
6. Relation  $dS = \frac{dQ}{T}$ , holds good in case of :- (SSC-12)
- (a) does not depend on the reversibility or irreversibility.  
(b) All real processes  
(c) reversible processes only  
(d) irreversible processes only
7. The entropy of the universe is :- (MP-11)
- (a) increasing (b) Decreasing (c) Constant (d) Unpredictable
8. Clausius inequality statement indicates that :- (MP-11)
- (a)  $\oint \frac{dQ}{T} = 0$  (b)  $\oint \frac{dQ}{T} \geq 0$  (c)  $\oint \frac{dQ}{T} < 0$  (d)  $\oint \frac{dQ}{T} \leq 0$
9. The unit of entropy is :- (MP-11)
- (a)  $\text{KJ/J}^\circ\text{K}$  (b)  $\text{J/Kg.m}$  (c)  $\text{J/Kg}^\circ\text{K}$  (d)  $\text{J/Sec}$

10. In a statistical thermodynamics, entropy is defined as — (UPRV L-JE)

- (a) Reversible heat transfer (b) Measure of reversibility of a sys  
(c) Degree of randomness (d) A universal property

11. Change of entropy depends on: — (UPJE-15)

- (a) change in volume (b) change in specific heat  
(c) Transfer of heat (d) change in mass

12. For an irreversible process entropy change is: — (UP-JE-16)

- (a) greater than  $\frac{\delta Q}{T} / \frac{\delta Q}{T}$  (b) equal to  $\frac{\delta Q}{T} / \frac{\delta Q}{T}$   
(c) less than  $\frac{\delta Q}{T} / \frac{\delta Q}{T}$  (d) equal to zero

13. Entropy change depends on: — (UP-JE-16)

- (a) Mass Transfer (b) Pressure Transfer  
(c) Volume Transfer (d) Heat Transfer

14. The change in entropy is zero during: — (Chatt-JE-08)

- (a) Hyperbolic process (b) Constant pressure process  
(c) Reversible adiabatic process (d) Polytropic process

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|-------|--------|--------|
| 1 - b | 6 - c  | 11 - c |
| 2 - b | 7 - a  | 12 - c |
| 3 - a | 8 - a  | 13 - d |
| 4 - b | 9 - c  | 14 - c |
| 5 - b | 10 - c | 15 -   |