

NIELIT Scientists-Technician model questions papers with answers and detailed explanations. Written test consists subject specialization questions for practice

1. Which one of the following represents open thermodynamic system ?

- (a) Manual ice cream freezer
- (b) Centrifugal pump (Ans)
- (c) Pressure cooker
- (d) Bomb calorimeter

2. A thermodynamic system is considered to be an isolated one if

- (a) Mass transfer and entropy change are zero
- (b) Entropy change and energy transfer are zero
- (c) Energy transfer and mass transfer are zero (Ans)
- (d) Mass transfer and volume change are zero

3. Reduced pressure is

- (a) Always less than atmospheric pressure
- (b) Always unity
- (c) An index of molecular position of a gas (Ans)
- (d) Dimensionless

5. Match List-I with List - II and select the correct answer using the code given below the lists:

List - I

- (A) Interchange of matter is not possible in a
- (B) Any processes in which the system returns to its original condition or state is called
- (C) Interchange of matter is possible in a
- (D) The quantity of matter under consideration in thermodynamics is called

List - II

- 1. Open system
- 2. System
- 3. Closed system
- 4. Cycle

Codes :

- | | (A) | (B) | (C) | (D) | |
|-----|-----|-----|-----|-----|-------|
| (a) | 2 | 1 | 4 | 3 | |
| (b) | 3 | 1 | 4 | 2 | |
| (c) | 2 | 4 | 1 | 3 | |
| (d) | 3 | 4 | 1 | 2 | (Ans) |

6. A closed system is one in which

- (a) Mass does not cross boundaries of the system, though energy may do so (Ans)
- (b) Mass crosses the boundary but not the energy
- (c) Neither mass nor energy cross the boundary of the system
- (d) Both energy and mass cross the boundaries of the system

7. Work transfer between the system and the surroundings

- (a) Is a point function
- (b) Is always given by $\int P dv$
- (c) is a function of pressure only
- (d) Depends on the path followed by the system (Ans)

8. Air is being forced by the bicycle pump into a tyre against a pressure of 4.5 bars. A slow downward movement of the piston can be approximated as

- (a) Isobaric process
- (b) Adiabatic process
- (c) Throttling process
- (d) Isothermal process (Ans)

9. Isentropic flow is

- (a) Irreversible adiabatic flow
- (b) Reversible adiabatic flow (Ans)
- (c) Ideal fluid flow
- (d) Frictionless reversible flow

10. Increase in entropy of a system represents

- (a) Increase in availability
- (b) Increase in temperature
- (c) Decrease in pressure
- (d) Degradation of energy (Ans)

11. The value of $\oint dQ/T$ for an irreversible cycle is

- (a) Equal to zero
- (b) Greater than zero (Ans)
- (c) Less than zero
- (d) Unity

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