

1. Which type of machine is primarily classified based on pressure rise and flow direction?

- a) Centrifugal blower
- b) Centrifugal compressor
- c) Axial flow compressor
- d) Reciprocating compressor

Answer: c) Axial flow compressor

Explanation: Axial flow compressors are classified based on pressure rise and the direction of flow, distinguishing them from other types of compressors.

2. What is the primary factor determining the classification of centrifugal blowers?

- a) Vane shape
- b) Velocity triangle
- c) Degree of reaction
- d) Slip coefficient

Answer: a) Vane shape

Explanation: The vane shape of centrifugal blowers plays a significant role in their classification, influencing their performance and efficiency.

3. Which parameter describes the deviation of the actual velocity triangle from the ideal in a centrifugal compressor?

- a) Degree of reaction
- b) Slip coefficient
- c) Size and speed of machine

d) Efficiency

Answer: b) Slip coefficient

Explanation: The slip coefficient in a centrifugal compressor characterizes the deviation of the actual velocity triangle from the ideal conditions, indicating losses in the compressor.

4. What characteristic determines the stresses experienced by the vanes in a centrifugal blower?

- a) Vane shape
- b) Size and speed of machine
- c) Efficiency
- d) Degree of reaction

Answer: a) Vane shape

Explanation: The shape of the vanes in a centrifugal blower directly influences the distribution of stresses experienced by them during operation.

5. Which law describes the relationship between the speed, pressure, and flow rate in a centrifugal blower?

- a) Boyle's law
- b) Charles's law
- c) Fan laws
- d) Bernoulli's principle

Answer: c) Fan laws

Explanation: Fan laws describe the relationship between speed, pressure, and flow rate in

centrifugal blowers, allowing for prediction of performance under varying conditions.

6. What parameter characterizes the deviation of actual work done by a centrifugal compressor from the ideal work done?

- a) Slip factor
- b) Work input factor
- c) Pressure coefficient
- d) Efficiency

Answer: a) Slip factor

Explanation: The slip factor in a centrifugal compressor quantifies the deviation of actual work done from the ideal work, providing insights into the compressor's performance.

7. Which component of a centrifugal compressor determines the dimensions of the inlet eye, impeller, and diffuser?

- a) Vane shape
- b) Degree of reaction
- c) Size and speed of machine
- d) Efficiency

Answer: c) Size and speed of machine

Explanation: The size and speed of the machine in a centrifugal compressor directly influence the dimensions of its components, including the inlet eye, impeller, and diffuser.

8. What parameter characterizes the extent of work done in axial flow compressors relative to ideal conditions?

- a) Work done factor
- b) Temp and pressure ratio
- c) Degree of reaction
- d) Dimensional analysis

Answer: a) Work done factor

Explanation: The work done factor in axial flow compressors describes the extent of work done relative to ideal conditions, indicating the efficiency of the compressor.

9. Which characteristic indicates the range of operation before instability occurs in an axial flow compressor?

- a) Surging
- b) Polytrophic efficiency
- c) Isentropic efficiency
- d) Dimensional analysis

Answer: a) Surging

Explanation: Surging in an axial flow compressor indicates the range of operation before instability occurs, often due to flow separation and reversal.

10. What efficiency parameter accounts for the losses due to irreversible processes in an axial flow compressor?

- a) Isentropic efficiency
- b) Polytrophic efficiency
- c) Degree of reaction
- d) Dimensional analysis

Answer: b) Polytrophic efficiency

Explanation: Polytrophic efficiency in an axial flow compressor considers losses due to irreversible processes, providing a measure of its overall effectiveness.

11. Which type of machine primarily uses vanes with a curved profile to direct airflow?

- a) Centrifugal blower
- b) Centrifugal compressor
- c) Axial flow compressor
- d) Reciprocating compressor

Answer: a) Centrifugal blower

Explanation: Centrifugal blowers typically utilize vanes with a curved profile to efficiently direct airflow, enhancing pressure rise.

12. What law governs the relationship between pressure, velocity, and elevation in fluid flow, influencing the design of centrifugal machines?

- a) Boyle's law
- b) Charles's law
- c) Bernoulli's principle
- d) Newton's second law

Answer: c) Bernoulli's principle

Explanation: Bernoulli's principle governs the relationship between pressure, velocity, and elevation in fluid flow, guiding the design and operation of centrifugal machines.

13. In a centrifugal compressor, what does the pressure coefficient represent?

- a) The deviation of actual work done from ideal conditions
- b) The ratio of actual pressure rise to ideal pressure rise
- c) The deviation of actual velocity triangle from the ideal
- d) The ratio of actual work input to ideal work input

Answer: b) The ratio of actual pressure rise to ideal pressure rise

Explanation: The pressure coefficient in a centrifugal compressor represents the ratio of actual pressure rise to ideal pressure rise, providing insights into its performance.

14. What is the primary factor influencing the degree of reaction in axial flow compressors?

- a) Vane shape
- b) Size and speed of machine
- c) Efficiency
- d) Slip coefficient

Answer: a) Vane shape

Explanation: The shape of vanes in axial flow compressors significantly influences the degree of reaction, affecting the airflow direction and pressure rise.

15. Which efficiency parameter accounts for losses due to friction, heat transfer, and other non-ideal processes in a compressor?

- a) Isentropic efficiency
- b) Polytrophic efficiency
- c) Degree of reaction
- d) Efficiency

Answer: a) Isentropic efficiency

Explanation: Isentropic efficiency in compressors considers losses due to friction, heat transfer, and other non-ideal processes, providing a measure of its thermodynamic performance.

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