1. Which law of thermodynamics governs the energy conversion process in turbo machines?
a) First law
b) Second law
c) Third law
d) Zeroth law

Answer: a) First law
Explanation: The first law of thermodynamics, also known as the law of energy conservation, governs the energy conversion process in turbo machines by accounting for the conservation of energy, stating that energy cannot be created or destroyed, only transformed from one form to another.

2. What equation represents the conservation of angular momentum in fluid flow through a turbo machine?
a) Bernoulli’s equation
b) Euler turbine equation
c) Energy equation
d) Moment of momentum equation

Answer: d) Moment of momentum equation
Explanation: The moment of momentum equation is derived from the conservation of angular momentum in fluid flow and is applicable to turbo machines. It describes the relationship between the torque exerted on a fluid and its angular momentum.

3. Which principle distinguishes between impulse and reaction turbo machines?
a) Newton’s third law
b) Conservation of mass

c) Conservation of energy
d) Principle of action and reaction

Answer: d) Principle of action and reaction
Explanation: Impulse and reaction turbo machines operate based on different principles of fluid flow. The principle of action and reaction distinguishes between them, where impulse turbines change the fluid's momentum entirely through the action of the blades, while reaction turbines partially rely on pressure change.

4. The degree of reaction in a turbo machine refers to the ratio of:
a) Static pressure change to total pressure change
b) Absolute velocity to relative velocity
c) Work done by the rotor to work done by the stator
d) Flow rate at the outlet to flow rate at the inlet

Answer: c) Work done by the rotor to work done by the stator
Explanation: The degree of reaction indicates the proportion of work done by the rotor to that done by the stator in a turbo machine. It helps in characterizing the machine's design and performance.

5. In the context of turbo machines, the Euler turbine equation is used to determine:
a) Pressure drop across the rotor
b) Efficiency of the stator
c) Velocity of the fluid leaving the rotor
d) Total energy change in the system

Answer: c) Velocity of the fluid leaving the rotor

Explanation: The Euler turbine equation relates the fluid velocity leaving the rotor to the changes in angular momentum and energy, aiding in analyzing and designing turbine stages.

6. The energy equation for relative velocities in turbo machines is based on the principle of:
a) Conservation of momentum
b) Conservation of energy
c) Conservation of angular momentum
d) Conservation of mass

Answer: b) Conservation of energy
Explanation: The energy equation for relative velocities in turbo machines is derived from the conservation of energy principle, accounting for changes in kinetic energy and potential energy as the fluid flows through the machine.

7. What aspect does the first law of thermodynamics primarily address in turbo machines?
a) Entropy generation
b) Energy conversion
c) Heat transfer
d) Irreversibility

Answer: b) Energy conversion
Explanation: The first law of thermodynamics primarily addresses energy conversion processes in turbo machines, ensuring that energy input is accounted for and properly utilized in performing work or changing the fluid’s energy state.

8. In one-dimensional analysis of turbo machines, what assumption is made regarding fluid flow?

a) Flow is steady and incompressible
b) Flow is turbulent and viscous
c) Flow is unsteady and compressible
d) Flow is laminar and inviscid

Answer: a) Flow is steady and incompressible
Explanation: One-dimensional analysis of turbo machines typically assumes steady and incompressible fluid flow, simplifying the analysis while still providing valuable insights into performance and behavior.

9. Which law of thermodynamics restricts the efficiency of turbo machines?
a) Zeroth law
b) First law
c) Second law
d) Third law

Answer: c) Second law
Explanation: The second law of thermodynamics imposes limitations on the efficiency of turbo machines, stating that no engine can be 100% efficient in converting heat into work due to the inevitable increase in entropy.

10. What does the degree of reaction indicate about a turbo machine?
a) Efficiency of the turbine
b) Balance of work between rotor and stator
c) Total pressure change across the machine
d) Relative velocity of the fluid leaving the rotor

Answer: b) Balance of work between rotor and stator
Explanation: The degree of reaction reflects how the work is distributed between the rotor and stator of a turbo machine, providing insights into the machine's design and performance characteristics.

Related posts:

1. Steam generators and boilers MCQs
2. Vapour Cycles MCQs
3. Gas Dynamics MCQs
4. Air Compressors MCQs
5. Nozzles and Condensers MCQs
6. Introduction to stress in machine component MCQs
7. Shafts MCQS
8. Springs MCQs
9. Brakes & Clutches MCQs
10. Journal Bearing MCQs
11. Energy transfer in turbo machines MCQs
12. Steam turbines MCQs
13. Water turbines MCQs
14. Rotary Fans, Blowers and Compressors MCQs
15. Power transmitting turbo machines MCQs
16. Steam turbines MCQs
17. Water turbines MCQS
18. Rotary Fans, Blowers and Compressors MCQs
19. Power transmitting turbo machines MCQs
20. Introduction to Computer Engineering MCQs

21. Types of Analysis MCQS
22. Heat Transfer and Conduction MCQs
23. Extended Surfaces (fins) MCQs
24. Convection MCQs
25. Thermal and Mass Transfer MCQs
26. Thermal Radiation & Boiling/Condensation MCQs
27. Mechanical processes MCQs
28. Electrochemical and chemical metal removal processes MCQs
29. Thermal metal removal processes MCQs
30. Rapid prototyping fabrication methods MCQs
31. Technologies of micro fabrication MCQs
32. Power Plant Engineering MCQs
33. Fossil fuel steam stations MCQs
34. Nuclear Power Station MCQs
35. Hydro-Power Station MCQs
36. Power Station Economics MCQs
37. Design of Belt, Rope and Chain Drives MCQS
38. Spur and Helical Gears MCQs
39. Bevel Gears MCQs
40. Design of I.C. Engine Components MCQs
41. Linear system and distribution models MCQs
42. Supply chain (SCM) MCQs
43. Inventory models MCQs
44. Queueing Theory & Game Theory MCQs
45. Project Management & Meta-heuristics MCQs
46. Overview of Systems Engineering MCQS
47. Structure of Complex Systems MCQs

48. Concept Development and Exploration MCQs
49. Engineering Development MCQs
50. Basic Concepts & Laws of Thermodynamics MCQs
51. Properties of Steam MCQs
52. Air standard cycles MCQS
53. Fuels & combustion MCQs
54. Materials Science MCQs
55. Alloys and Materials MCQs
56. Metal Heat Treatment MCQs
57. Material Testing and Properties MCQs
58. Chemical Analysis of Metal Alloys MCQs
59. Stress and strain MCQs
60. Bending MCQs
61. Torsion in shafts MCQs
62. Theories of failures MCQs
63. Columns & struts MCQs
64. Manufacturing Process MCQs