1. Which cycle is known for its theoretical efficiency limit among all heat engines?

a) Vapor Carnot cycle
b) Rankine cycle
c) Modified Rankine cycle
d) Reheat cycle

Answer: a) Vapor Carnot cycle
Explanation: The Vapor Carnot cycle represents the idealized maximum efficiency achievable by any heat engine operating between two temperature reservoirs. However, it's limited by practical considerations such as pressure drop in the turbine and the non-ideal nature of real working fluids.

2. In the Rankine cycle, what effect does increasing boiler pressure have on end moisture and efficiency?

a) Increases end moisture, increases efficiency
b) Decreases end moisture, increases efficiency
c) Increases end moisture, decreases efficiency
d) Decreases end moisture, decreases efficiency

Answer: b) Decreases end moisture, increases efficiency
Explanation: Increasing boiler pressure in the Rankine cycle typically leads to a reduction in the moisture content at the turbine exit due to increased dryness fraction, and it also tends to increase the cycle efficiency by improving the heat input.

3. What is the purpose of a condenser in the Rankine cycle?

a) To increase turbine efficiency
b) To decrease turbine efficiency
c) To increase boiler pressure
d) To decrease boiler pressure

Answer: a) To increase turbine efficiency
Explanation: The condenser in the Rankine cycle serves to condense the exhaust steam from the turbine, thus increasing the pressure difference across the turbine and consequently improving its efficiency.

4. Which type of feed water heater involves direct contact between extracted steam and feed water?

a) Open type
b) Closed type
c) Regenerative type
d) Reheat type

Answer: a) Open type
Explanation: In an open type feed water heater, extracted steam from the turbine comes into direct contact with the feed water, allowing for efficient heat transfer.

5. What is the main advantage of the regenerative-reheat cycle compared to the basic Rankine cycle?

a) Higher efficiency
b) Lower efficiency
c) Simplicity in design

d) Reduced need for feed water heaters

Answer: a) Higher efficiency
Explanation: The regenerative-reheat cycle combines the advantages of regeneration and reheating, resulting in higher cycle efficiency compared to the basic Rankine cycle.

6. In the context of the Rankine cycle, what does superheat refer to?

a) Heating steam above its saturation temperature
b) Cooling steam below its saturation temperature
c) Increasing pressure in the condenser
d) Decreasing pressure in the boiler

Answer: a) Heating steam above its saturation temperature
Explanation: Superheating steam involves heating it beyond its saturation temperature at constant pressure, which increases its energy content and improves turbine efficiency.

7. Which cycle utilizes a combination of supercritical pressure and binary-vapor to enhance efficiency?

a) Supercritical pressure cycle
b) Binary-vapor cycle
c) Supercritical-binary cycle
d) Supercritical Rankine cycle

Answer: b) Binary-vapor cycle
Explanation: The binary-vapor cycle utilizes a combination of supercritical pressure and binary-vapor (two-phase) to enhance efficiency by utilizing different working fluids at

different stages of the cycle.

8. What is the primary purpose of a reheat cycle in the Rankine cycle?

a) To increase boiler pressure
b) To decrease turbine efficiency
c) To increase turbine efficiency
d) To decrease condenser pressure

Answer: c) To increase turbine efficiency
Explanation: The reheat cycle involves reheating the steam after partial expansion in the turbine, which helps maintain high steam quality and reduces moisture content, thus increasing turbine efficiency.

9. Which cycle involves the use of multiple heaters to progressively heat the feed water?

a) Regenerative cycle
b) Reheat cycle
c) Ideal regenerative cycle
d) Multiple heater cycle

Answer: c) Ideal regenerative cycle
Explanation: The ideal regenerative cycle employs multiple heaters to progressively heat the feed water using steam extracted from various stages of the turbine, aiming to approach maximum efficiency.

10. What is the main limitation of the Vapor Carnot cycle in practical applications?

a) It requires high-pressure boilers
b) It is difficult to implement in real systems
c) It is sensitive to variations in temperature
d) It ignores pressure losses and irreversibilities

Answer: d) It ignores pressure losses and irreversibilities
Explanation: The main limitation of the Vapor Carnot cycle is its idealized nature, as it assumes reversible processes without considering pressure losses, friction, and other irreversibilities present in real-world systems.

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