

# **Introduction to sodium technology – Heat transport system (primary circuit)**

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# 1 Quiz

## 1.1 Questions

1. Mention the number of circuits in heat transport system of a sodium cooled fast reactor.
2. The purpose of using an intermediate heat exchanger in primary circuit is to
  - (a) increase the efficiency of heat transfer
  - (b) increase the overall plant efficiency
  - (c) to prevent contact between primary sodium and water
  - (d) to promote contact between primary sodium and water
3. How are intermediate heat exchangers connected to the Reactor Vessel?
  - (a) through penetrations on the top shield
  - (b) through penetrations on the sides of reactor vessel
  - (c) through penetrations on the bottom of reactor vessel
  - (d) none of the above
4. What is the ratio of number of primary sodium pumps to the number of intermediate heat exchangers in a typical sodium cooled fast reactor?
  - (a) 1:1
  - (b) 2:1
  - (c) 1:2
  - (d) 1:3
5. Which one of the following is not a function of grid plate?
  - (a) flow distribution
  - (b) mixing
  - (c) structural support
  - (d) none of the above
6. Which of the following type of pump is used for pumping primary liquid sodium?
  - (a) gear pump
  - (b) centrifugal pump
  - (c) reciprocating pump
  - (d) electromagnetic pump
7. Which of the following are not functions of tube sheet in shell and tube heat exchanger?
  - (a) provide passage for shell side fluid
  - (b) hold tubes in their positions
  - (c) prevent intermixing of shell side and tube side fluid
  - (d) improve heat transfer rate
8. Which one(s) of the following are not true about countercurrent flow in heat exchanger?
  - (a) higher driving force
  - (b) lower driving force
  - (c) outlet temperature of cold fluid can be greater than the outlet temperature of hot fluid

(d) outlet temperature of cold fluid cannot be greater than the outlet temperature of hot fluid

9. For the temperatures of primary sodium and secondary sodium specified in examples 1 and 2, it is possible to use a cocurrent heat exchanger?

## **1.2 Answers**

1. Primary circuit, Secondary circuit, Steam-water circuits
2. (c) to prevent contact between primary sodium and water
3. (a) through penetrations on the top shield
4. (c) 1:2
5. (d) none of the above
6. (b) centrifugal pump
7. (a), (b) & (c)
8. (b) & (d)
9. No