

# Unit 7 - Week 5 : Reactor Thermalhydraulics

## Course outline

How does an NPTEL online course work?

Week 0 : Prerequisite

Week 1: Fundamentals of Nuclear Power

Week 2 : Radioactivity and nuclear Reactions

Week 3 : Nuclear Fission

Week 4:Chain Reaction in Reactors

Week 5 : Reactor Thermalhydraulics

● Lec 1 : Nuclear fuel & simple energy consideration

● Lec 2:Axial temperature distribution & heat transfer coefficient

○ Quiz : Assessment 5

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Week 6:Reactor Control

Week 7:Thermal Reactors

Week 8:Breeder Reactors

Week 9:Nuclear Fusion

Week 10:Biological Effects of Radiation

Week 11:Reactor Safety & Security

Week 12:Waste Management

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## Assessment 5

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

**Due on 2020-03-04, 23:59 IST.**

1) Production of hydrogen & oxygen from sulphuric acid because of nuclear radiation is known as

1 point

- hydrolysis  
 pyrolysis  
 electrolysis  
 radiolysis

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*radiolysis*

2) In order to avoid the corrosive effect of  $H_2SO_4$ , aqueous homogenous reactors can use

1 point

- HCl  
  $H_2NO_3$   
  $H_3PO_4$   
 HCOOH

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 *$H_2NO_3$*

3) Among the followings, the fuel with higher melting point is

1 point

- oxide fuel  
 metal fuel  
 ceramic fuel  
 liquid fuel

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*oxide fuel*

4) MOX refers to a fuel mixture of

1 point

- several isotopes of uranium  
 uranium & thorium  
 uranium & plutonium  
 different isotopes of plutonium

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*uranium & plutonium*

5) Major actinides refer to

1 point

- all isotopes having atomic number higher than 88  
 uranium & thorium  
 uranium & plutonium  
 uranium & protactinium

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*uranium & plutonium*

6) Higher thermal conductivity is desired for a nuclear fuel to

1 point

- increase the power output  
 provide good mechanical strength at elevated temperatures  
 increase the rate of fission  
 lower the maximum fuel temperature

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*lower the maximum fuel temperature*

7) A fuel must have high

1 point

- $\sigma_f$   
  
  $\sigma_s$   
  
  $\sigma_i$   
  
  $\sigma_c$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 *$\sigma_f$*

8) Cladding can provide additional surfaces for heat transfer in reactors employing which of the following as coolant?

1 point

- gas  
 normal water  
 heavy water  
 liquid sodium

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*gas*

9) Energy carried by which of the following fission products can't be recovered by the coolant?

1 point

- fission fragments  
  
  $\beta$ -rays  
 neutrinos  
  
  $\gamma$ -rays

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*neutrinos*

10) SI unit of thermal resistance is

1 point

- W/m.K  
  $W/m^2K$   
  $W/m^2$   
 K/W

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*K/W*

11) Presence of air gap between fuel & coolant leads to significant reduction in temperature because of

1 point

- high heat capacity of cladding  
 high thermal resistance of air  
 large thermal conductivity of air  
 high thermal conductivity of fuel

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*high thermal resistance of air*

12) Temperature rise across the cladding for a plate-type fuel is directly proportional to

1 point

- thickness of cladding  
 density of cladding  
 thermal conductivity of cladding  
 cross-sectional area of cladding

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*thickness of cladding*