

Unit 10 - Week 8:Breeder Reactors

Course outline
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Assessment 8

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

Due on 2020-03-25, 23:59 IST.

1) A nuclear reactor can be termed as breeder only when the conversion ratio is 1 point

- positive
 less than 1
 exactly equal to 1
 greater than 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
greater than 1

2) If the breeding gain for a reactor is non-negative, then it is a 1 point

- breeder
 advanced converter
 converter
 burner

No, the answer is incorrect.
Score: 0

Accepted Answers:
breeder

3) The conversion ratio for a thorium cycle is higher than the same for a uranium cycle because of 1 point

- lower fuel mass
 larger half-life of thorium
 lower capture-to-fission ratio of thorium
 larger activity level of thorium

No, the answer is incorrect.
Score: 0

Accepted Answers:
lower capture-to-fission ratio of thorium

4) Chemical composition of yellow cake is 1 point

- UO_2
 U_3O_8
 UF_6
 UC

No, the answer is incorrect.
Score: 0

Accepted Answers:
 U_3O_8

5) Uranium hexafluoride is a 1 point

- liquid
 gas
 amorphous solid
 crystalline solid

No, the answer is incorrect.
Score: 0

Accepted Answers:
gas

6) During the process of uranium conversion and enrichment, yellow cake is treated with 1 point

- sulphuric acid
 phosphoric acid
 hydrofluoric acid
 hydrochloric acid

No, the answer is incorrect.
Score: 0

Accepted Answers:
hydrofluoric acid

7) Gas centrifuge is a very popular method of 1 point

- fuel milling
 fuel conversion
 fuel enrichment
 spent fuel reprocessing

No, the answer is incorrect.
Score: 0

Accepted Answers:
fuel enrichment

8) PUREX stand for 1 point

- plutonium uranium repeat extraction
 plutonium uranium radium extraction
 plutonium uranium radon extraction
 plutonium uranium redox extraction

No, the answer is incorrect.
Score: 0

Accepted Answers:
plutonium uranium redox extraction

9) Level of fuel enrichment required in typical FBR is 1 point

- about 1%
 2-5%
 5-10%
 more than 10%

No, the answer is incorrect.
Score: 0

Accepted Answers:
more than 10%

10) Liquid metal is preferred as the coolant in FBRs because of 1 point

- favorable heat transport properties of liquid metal
 favorable electrical transport properties of liquid metal
 favorable momentum transport properties of liquid metal
 favorable mass transport properties of liquid metal

No, the answer is incorrect.
Score: 0

Accepted Answers:
favorable heat transport properties of liquid metal

11) In the traditional pool-type design of FBRs, 1 point

- only reactor core is immersed in a pool of liquid metal.
 both reactor core & primary coolant pump are immersed in a pool of liquid metal.
 reactor core, primary coolant pump & primary heat exchanger are immersed in a pool of liquid metal.
 reactor core, primary coolant pump, primary heat exchanger & steam generator are immersed in a pool of liquid metal.

No, the answer is incorrect.
Score: 0

Accepted Answers:
reactor core, primary coolant pump & primary heat exchanger are immersed in a pool of liquid metal.

12) A major challenge of handling liquid sodium is 1 point

- its strongly reactive nature towards water.
 its corrosive nature towards stainless steel.
 its high density.
 its evaporative nature.

No, the answer is incorrect.
Score: 0

Accepted Answers:
its strongly reactive nature towards water.

13) In-service inspection and repair of LMFBR is not possible because of the _____ nature of liquid sodium.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: String) opaque
(Type: String) non-transparent
(Type: String) non transparent

14) Gas-cooled fast reactors propose to offer higher thermal efficiency compared to LMFBRs, because of the higher operating _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: String) temperature
(Type: String) temperatures

15) A FBR is fuelled with UO_2 , which contained 5% U-235 and rest U-238. A uniform neutron flux of 10^{13} neutrons/cm²s is maintained inside the reactor. Pu-239 gets produced because of the non-fission capture reaction. The fission and capture cross-sections for U-235 are 580 & 100 barns respectively, whereas the same quantities for Pu-239 are 270 & 745 barns respectively. Net absorption cross-section for U-238 is 2.7 barns. Then the conversion factor after 1 year of operation is _____ (correct to 3 decimal places)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.088,0.094

1 point