

# Unit 3 - Week 1: Fundamentals of Nuclear Power

## Course outline

How does an NPTEL online course work?

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Week 1: Fundamentals of Nuclear Power

● Lec 1 : Introduction of nuclear energy

● Lec 2 : Binding energy and mass defect

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## Assignment 1

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

**Due on 2020-02-12, 23:59 IST.**

1) Out of the following pairs, which one refers to the nucleons? 1 point

- electron & positron  
 proton & neutron  
 proton & positron  
 neutron & electron

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*proton & neutron*

2) Nuclear property of an isotope is primarily determined by 1 point

- number of protons  
 number of electrons  
 number of neutrons  
 number of nucleons

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*number of nucleons*

3) Definition of atomic mass unit refers to the mass of 1 point

- $^{12}_5N$   
  $^{11}_6C$   
  $^{12}_6C$   
  $^{14}_5N$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $^{12}_6C$

4)  $^3_1H$  and  $^4_2He$  isotopes have equal number of 1 point

- protons  
 neutrons  
 electrons  
 nucleons

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*neutrons*

5)  $^{62}_{28}Ni$  and  $^{62}_{29}Cu$  isotopes have equal number of 1 point

- protons  
 neutrons  
 electrons  
 nucleons

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*nucleons*

6) Which of the following isotope has the largest value of binding energy per nucleon? 1 point

- $^{62}_{28}Ni$   
  $^3_2He$   
  $^{56}_{26}Fe$   
  $^{235}_{92}He$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $^{62}_{28}Ni$

7) To calculate the binding energy for an isotope, we need to know 1 point

- both atomic & mass number  
 solely mass number  
 solely atomic number  
 solely the number of neutrons

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*both atomic & mass number*

8) If a  $^{25}_{13}Al$  isotope absorbs an electron during a nuclear reaction, the atomic number of the resultant nucleus is 1 point

- 11  
 12  
 13  
 14

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
12

9) If a particular uranium nucleus (Z = 92) is having an atomic mass of 235.043922 u and its binding energy per nucleon is 7.59 MeV, its mass number is 1 point

- 233  
 234  
 235  
 238

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
235

10) If atomic mass of deuterium is 2.0141 u, mass defect as per the following reaction is,  $^1_2H + ^1_0n \rightarrow ^2_1H$  1 point

- 0.00139 u  
 0.00209 u  
 0.00239 u  
 0.00329 u

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*0.00239 u*

11) As per the following relation  $^{239}_{94}Pu \rightarrow ^x_{92}U + ^4_2He$ , x = 1 point

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 234.5,235.5

12) If the atomic mass of  $^{13}_6C$  is 13.003355 u, its binding energy per nucleon is \_\_\_\_\_ MeV. 1 point

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 7.45,7.72

13) If two sub-atomic particles, both having individual mass equal to that of an electron, reacts with each other and gets completely annihilated, amount of energy released will be \_\_\_\_\_ MeV. 1 point

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 1.02,1.024