PHYSICS

BOOKS - BETTER CHOICE PUBLICATION

NUCLEAR REACTIONS

Very Short Answer Type Questions

1. What are thermal neutrons?

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2. Why is nuclear fusion not possible in laboratory?

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3. Define critical mass of nuclear chain reaction.

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4. Why are control rods made of cadmium usedto control nuclear chain reaction ?

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5. Write an equation representing nuclear fusion.

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Most Expected Questions

1. What is the role of a moderator in a nuclear reactor?

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2. Why is nuclear fusion not possible in laboratory?

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3. What do you mean by fissile material ?

4. Why is heavy water used as moderator?

5. Nuclear fusion reactions are also known as thermo nuclear reactions. Why?

Short Answer Type Questions

1. What do you mean by Q value of a nuclear reaction?

2. What is a nuclear fission reaction?

3. Explain the phenomenon of fission. Give one representative equation.

4. Write three points to distinguish between nuclear fission and nuclear

5. Write one similarity and one difference between nuclear fusion and fission.

6. A fusion reaction is more energetic than fission reaction. Comment.

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7. The sun is continuously losing mass. Comment on the statement.

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Numerical Problems

1. It is given that each fission of a chain reaction produces 200 MeV energy. What is the number of fissions taking place per second it the reactor produces $10^{12}W$ Power ?

2. What is the total energy released if 1g of $_{92}U^{235}$ undergoes fission ? It is given that each fission gives out 200 MeV energy.

3. If 200 MeV energy is produced for a single fission of $_{92}U^{235}$, how many fissions must take place per hour to produce a power of 10^3 KW ?

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4. If every fission of $_{92}U^{235}$ releases 200.8 MeV energy, then find the rate of fission, if a total power 2 MW is released.

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5. If every fission of $_{92}U^{235}$ releases 200 MeV energy, then find the rate of fission, if a total power 3 MW is released.

6. If every fission of $_{92}U^{235}$ releases 200.8 MeV energy, then find the rate of fission, if a total power 2 MW is released.

7. Aman designed an atomic power plant which produces 100 MW power by using $_{92}U^{235}$. If fission of each atom of $_{92}U^{235}$ produces 200 Me V of heat energy and the plant converts 90% of it into electric energy then how many grams of $_{92}U^{235}$ will be consumed at that plant in a day ?

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8. Jagriti designed an atomic power which produces 200 MW power by using $_{92}U^{235}$. If

fission of each atom of $_{92}U^{235}$ produces 200 MeV of heat energy and the plant converts 80% of it into electric energy then how many grams of $_{92}U^{235}$ will be consumed by that plant in a day.

9. Munish designed an atomic power plant which produces 250 MW power by using $_{92}U^{235}$. If fission of each atom of $_{92}U^{235}$ produces 200 MeV of heat energy and the

plant converts 75% of it into electric energy then how many grams of $_{92}U^{235}$ will be consumed at that plant in a day ?