

Department of Science & Humanities (Chemistry)

Unit-V - ENERGY SOURCES AND STORAGE DEVICES

1. The process of splitting of heavier nucleus into two (or) more smaller nuclei with liberation of large amount of energy is known as -----
- A. Nuclear fusion
 - B. Nuclear fission**
 - C. Nuclear energy
 - D. Radiation energy

Answer: (B)

2. Naturally-occurring Uranium is a mixture of ----- and -----
- A. U-235 & U-238**
 - B. U-235 & Th-238
 - C. U-235 & U-236
 - D. U-235 & Pu-239

Answer: (A)

3. Atomic weight of fission products ranges from about -----.
- A. 70 to 100
 - B. 70 to 120**
 - C. 70 to 160
 - D. 70 to 235

Answer: (B)

4. Chain reactions can be controlled and maintained steadily by absorbing a desired number of neutrons.

- A. Protons
- B. Neutrons**
- C. Electrons
- D. Positrons

Answer: (B)

5. The number of neutrons, resulting from a single fission is known as -----.

- A. Energy factor
- B. Emission factor
- C. Multiplication factor**
- D. Division factor

Answer: (C)

6. The energy of stars and sun is aroused from ----- reactions.

- A. fusion**
- B. fission
- C. nuclear
- D. thermal

Answer: (A)

7. A type of reaction, where the neutrons from the previous step continue to propagate and repeat the reaction is called -----.

- A. nuclear chain reaction**
- B. radioactive reaction
- C. solar reaction
- D. spontaneous reaction

Answer: (A)

8. The minimum amount of fissionable material (U^{235}) required continuing the nuclear chain reaction is called -----

- A. sub-critical mass
- B. super- critical mass
- C. **critical mass**
- D. atomic mass

Answer: (C)

9. The most nuclear fuel used in the world is -----

- A. Thorium – 232
- B. Uranium – 238
- C. **Uranium – 235**
- D. Plutonium – 239

Answer: (C)

10. Amongst the following, the fissionable materials are -----

- A. **U233 and Pu239**
- B. U231 and Pu233
- C. U235 and Pu235
- D. U238 and Pu239

Answer: (A)

11. Moderator in nuclear plants is used to -----

- A. extract heat from nuclear reaction
- B. control the reaction
- C. **to reduce the speed (K.E) of neutrons**
- D. moderate the radioactive pollution

Answer: (C)

12. The most commonly used moderator in nuclear plants is -----

- A. heavy water
- B. concrete and bricks

C. graphite and concrete

D. **graphite**

Answer: (D)

13. Breeder reactor has a conversion ratio of -----

A. unity

B. **more than unity**

C. less than unity

D. infinity

Answer: (B)

14. The commonly used material for shielding is -----

A. **lead or concrete**

B. lead and tin

C. graphite or cadmium

D. thick galvanized sheets

Answer: (A)

15. Which of the following can be used as a coolant in nuclear plant?

A. molten lead

B. carbon dioxide

C. **light or heavy water**

D. carbon tetrachloride

Answer: (C)

16. Name the moderator used in the nuclear reactor?

A. Plutonium

B. Thorium

C. **Graphite**

D. Berilium

Answer: (C)

17. Which isotope of Uranium has the capacity to sustain the chain reaction?

A. U-230

B. **U-235**

C. U-245

D. U-225

Answer: (B)

18. During an atomic explosion, the energy released is due to

A. Conversion of protons to neutrons

B. Conversion of chemical energy into heat energy

C. Conversion of mechanical energy into nuclear energy

D. **Conversion of mass into energy**

Answer: (D)

19. What is the beneficial aspect of nuclear fission?

A. The ability to absorb energy

B. The ability to produce more energy than nuclear fusion

C. **The ability to release tremendous amounts of energy**

D. There are no beneficial aspects of nuclear fission

Answer: (C)

20. Heavy Water (D₂O) in a nuclear reactor, serves as -----

A. Coolant

B. Moderator

C. **Both Coolant and Moderator**

D. Neutron absorber

Answer: (C)

21. Use of molten metal as a coolant in fast breedor reactor helps in -----

- A. Rapid heat transfer from the core
- B. Accelerating the reaction rate in the core**
- C. Breeding neutrons
- D. Accelerating the neutrons

Answer: (B)

22. ----- produces heat energy and neutrons that starts nuclear chain reaction.

- A. **Fuel rods**
- B. Control rods
- C. Moderators
- D. Coolants

Answer: (A)

23. To control the fission reaction (Rate), movable rods, made of -----

- A. Graphite
- B. Heavy water
- C. Cd (or) B**
- D. Uranium rods

Answer: (C)

24. ----- converts the non-fissionable material (U^{238}) into fissionable material (Pu^{239}).

- A. Thermal reactor
- B. Nuclear reactor
- C. Breeder reactor**
- D. Atomic reactor

Answer: (C)

25. The non-fissionable nucleides such as U^{238} & Th^{232} are called -----

- A. Fissile nuclides

B. Fertile nuclides

C. Non-fissile nuclides

D. Non-fertile nuclides

Answer: (B)