

POWER PLANT ENGINEERING MCQ

1. Enriched uranium is required as a fuel in a nuclear reactor, if light water is used as moderator and coolant, because light water has

- ☐ (A) High neutron absorption cross-section
- ☐ (B) Low moderating efficiency
- ☐ (C) High neutron scatter cross-section
- ☐ (D) Low neutron absorption cross-section

2. The efficiency of a nuclear power plant in comparison to conventional and nuclear consideration is

- ☐ (A) Higher cost of nuclear fuel
 - ☐ (B) High initial cost
 - ☐ (C) High heat rejection in condenser
 - ☐ (D) Lower temperature and pressure conditions
-

3. The control rods in the control system of nuclear reactors are used to

- ☐ (A) Absorb excess neutrons
 - ☐ (B) Control fuel consumption
 - ☐ (C) Control temperature
 - ☐ (D) All of these
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4. Electron volt is the unit of

- ☐ (A) Atomic power

- ☐ (B) Energy
 - ☐ (C) Voltage
 - ☐ (D) Radio activity
-

5. A moderator, in nuclear power plants, is a medium introduced into the fuel mass in order to

- ☐ (A) Slow down the speed of fast moving neutrons
 - ☐ (B) Control the reaction
 - ☐ (C) Reduce the temperature
 - ☐ (D) Extracts heat from nuclear reaction
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6. One gram of uranium will produce energy equivalent to approximately

- ☐ (A) 1 tonne of high grade coal
 - ☐ (B) 4.5 tonnes of high grade coal
 - ☐ (C) 10 tonnes of high grade coal
 - ☐ (D) 100 tonnes of high grade coal
-

7. Which of the following type of pump is used in liquid metal cooled reactor for circulation of liquid metal

- ☐ (A) Centrifugal
 - ☐ (B) Axial
 - ☐ (C) Reciprocation
 - ☐ (D) Electromagnetic
-

8. Where reactor operation is designed with fast neutrons such as in reactors using highly enriched fuel, the moderator used is

- ☐ (A) Heavy water

- ☐ (B) Graphite
- ☐ (C) Carbon dioxide
- ☐ (D) No moderator is needed

Answer: Option D

9. The nuclear energy is measured as

- ☐ [\(A\) MeV](#)
 - ☐ [\(B\) Curie](#)
 - ☐ [\(C\) Farads](#)
 - ☐ [\(D\) MW](#)
-
-

10. Isotopes of same elements have

- ☐ [\(A\) Same atomic number and different masses](#)
 - ☐ [\(B\) Same chemical properties but different atomic numbers](#)
 - ☐ [\(C\) Different masses and different atomic numbers](#)
 - ☐ [\(D\) Different chemical properties and same atomic numbers](#)
-
-

11. A boiling water reactor uses following as fuel

- ☐ [\(A\) Enriched uranium](#)
 - ☐ [\(B\) Plutonium](#)
 - ☐ [\(C\) Thorium](#)
 - ☐ [\(D\) U](#)
-
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12. Which of the following statement is correct regarding the features of a Breeder reactor?

- ☐ [\(A\) It produces more fuel than it consumes](#)
- ☐ [\(B\) It requires highly enriched fuel](#)
- ☐ [\(C\) It requires liquid sodium metal as moderator](#)
- ☐ [\(D\) All of the above](#)

13. In nuclear fission each neutron that causes fission releases

- ☐ (A) No new neutron
 - ☐ (B) At least one new neutron
 - ☐ (C) One new neutron
 - ☐ (D) More than one new neutron
-
-

14. Artificial radioactive isotopes find application in

- ☐ (A) Power generation
 - ☐ (B) Nucleonic devices
 - ☐ (C) Nuclear fission
 - ☐ (D) Medical field
-
-

15. Each fission of U_{235} produces on the average _____ fast neutrons as a product of reaction.

- ☐ (A) 2.46
 - ☐ (B) 24.6
 - ☐ (C) 246
 - ☐ (D) 2460
-
-

View All Answers

(1) Answer: Option B (2) Answer: Option D (3) Answer: Option A (4) Answer: Option B (5) Answer: Option A (6) Answer: Option B (7) Answer: Option D (8) Answer: Option D (9) Answer: Option A (10) Answer: Option B (11) Answer: Option A (12) Answer: Option D (13) Answer: Option D (14) Answer: Option D (15) Answer: Option A

16. The process by which a heavy nucleus is spitted into two light nuclei is known as

- ☐ (A) Splitting
- ☐ (B) Fission
- ☐ (C) Fusion
- ☐ (D) Disintegration

17. Which of the following is more appropriate for a moderator? One which

- ☐ (A) Does not absorb neutrons
 - ☐ (B) Absorbs neutrons
 - ☐ (C) Accelerates neutrons
 - ☐ (D) Eats up neutrons
-

18. A nuclear reactor is said to be critical when the neutron population in the reactor core is

- ☐ (A) Rapidly increasing leading to the point of explosion
 - ☐ (B) Decreasing from the specified value
 - ☐ (C) Reduced to zero
 - ☐ (D) Constant
-

19. The most commonly used moderator in nuclear plants is

- ☐ (A) Heavy water
 - ☐ (B) Concrete and bricks
 - ☐ (C) Graphite and concrete
 - ☐ (D) Graphite
-

20. Reactors for propulsion applications are designed for

- ☐ (A) Any form of uranium
 - ☐ (B) Natural uranium
 - ☐ (C) Enriched uranium
 - ☐ (D) Plutonium
-

21. The following present serious difficulty in designing reactor shield

- ☐ (A) Alpha particles
 - ☐ (B) Beta particles
 - ☐ (C) Thermal neutrons
 - ☐ (D) Fast neutrons and gamma rays
-

22. Ferrite material is

- ☐ (A) The most fissionable material
 - ☐ (B) The basic fuel for nuclear paints
 - ☐ (C) Basic raw material for nuclear plants
 - ☐ (D) The material which absorbs neutrons and undergoes spontaneous changes leading to the formation of fissionable material
-

23. Reflector in nuclear power plants _____ neutron leakage.

- ☐ (A) Increases
 - ☐ (B) Decreases
 - ☐ (C) Have no effect on
 - ☐ (D) None of these
-

24. Effective moderators are those materials which contain

- ☐ (A) [Light weight atoms](#)
- ☐ (B) [Heavy weight atoms](#)
- ☐ (C) [Critical atoms](#)
- ☐ (D) [Zero weight atoms](#)

[Correct Answer](#)

[25. The fuel needed, with reflector in nuclear power plant, in order to generate sufficient neutrons to sustain a chain reaction, would be](#)

☐ (A) More

☐ (B) Less

☐ (C) Same

☐ (D) Zero

Correct Answer

26. Nuclear reactors are used

☐ (A) To produce heat for thermoelectric power

☐ (B) To produce fissionable material

☐ (C) To propel ships, submarines, aircrafts

☐ (D) All of these

Correct Answer

27. The main interest of shielding in nuclear reactor is protection against

☐ (A) X-rays

☐ (B) Infrared rays

☐ (C) Neutrons and gamma rays

☐ (D) Electrons

Correct Answer

28. Breeder reactors employ liquid metal coolant because it

☐ (A) Acts as good moderator

☐ (B) Produces maximum steam

☐ (C) Transfers heat from core at a fast rate

☐ (D) Breeds neutrons

Correct Answer

29. The coolant used in boiling water reactor is

☐ (A) CO₂

☐ (B) Pressurised water

☐ [\(C\) Mixture of water and steam](#)

☐ [\(D\) Liquid metal](#)

[Correct Answer](#)

30. [A moderator](#)

☐ [\(A\) Absorbs neutrons](#)

☐ [\(B\) Does not absorb neutrons](#)

☐ [\(C\) Accelerates neutrons](#)

☐ [\(D\) None of these](#)

[Correct Answer](#)

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(16) Answer: Option B (17) Answer: Option A (18) Answer: Option D (19) Answer: Option D (20) Answer: Option C (21) Answer: Option D (22) Answer: Option D (23) Answer: Option B (24) Answer: Option A (25) Answer: Option B (26) Answer: Option D (27) Answer: Option D (28) Answer: Option C (29) Answer: Option C (15) Answer: Option B

31. A nuclear fission is initiated when the critical energy as compared to neutron binding energy of the atoms is

☐ (A) Same

☐ (B) More

☐ (C) Less

☐ (D) There is no such criterion

32. In a thermal power plant, coal from the coal handling plant is moved to the boiler bunker through a

☐ (A) Belt conveyor

☐ (B) Bucket conveyor

☐ (C) Fork lift truck

☐ (D) Overhead crane

33. In the breeder reactors the generation of new fissionable atom is

- ☐ (A) At the lower rate than the consumption
 - ☐ (B) At a higher rate than the consumption
 - ☐ (C) At an equal rate of the consumption
 - ☐ (D) Depends on other considerations
-

34. The most practical fuel for a thermonuclear reactor, both from economical and nuclear consideration is

- ☐ (A) Plutonium
 - ☐ (B) Uranium
 - ☐ (C) Deuterium
 - ☐ (D) Thorium
-

35. A power plant giving least running cost of production of electrical power is

- ☐ (A) Steam power plant
 - ☐ (B) Gas turbine power plant
 - ☐ (C) Hydro electric power plant
 - ☐ (D) Nuclear power plant
-

36. The breeding gain in case of thermal breeder reactor as compared to fast breeder reactor is

- ☐ (A) Same
 - ☐ (B) Lower
 - ☐ (C) Higher
 - ☐ (D) Unity
-

37. The energy produced by a thermal reactor of same size as a breeder reactor is

- ☐ (A) Almost same
 - ☐ (B) Slightly more
 - ☐ (C) Slightly less
 - ☐ (D) Much less
-

38. Which of the following nuclear reactor does not need a heat exchanger for generation of steam?

- ☐ (A) Gas cooled
 - ☐ (B) Liquid metal cooled
 - ☐ (C) Pressurised water
 - ☐ (D) Boiling water
-

39. Reactors designed for propulsion applications are designed for

- ☐ (A) [Natural uranium](#)
- ☐ (B) [Enriched uranium](#)
- ☐ (C) [Pure uranium](#)
- ☐ (D) [Any type of uranium](#)

[Correct Answer](#)

40. [The primary fuel used in nuclear power plants is](#)

- ☐ (A) [U₂₃₅](#)
- ☐ (B) [U₂₃₈](#)
- ☐ (C) [Pu₂₃₉](#)
- ☐ (D) [Pu₂₃₃](#)

[Correct Answer](#)

41. [In natural uranium, the constituents of three naturally occurring isotopes are](#)

- ☐ (A) [U₂₃₄ = 0.006%, U₂₃₅ = 0.712% and U₂₃₈ = 99.282%](#)

☐ (B) $U_{234} = 0.712\%$, $U_{235} = 0.006\%$ and $U_{238} = 99.282\%$

☐ (C) $U_{234} = 99.282\%$, $U_{235} = 0.006\%$ and $U_{238} = 0.712\%$

☐ (D) $U_{234} = 0.006\%$, $U_{235} = 99.282\%$ and $U_{238} = 0.712\%$

Correct Answer

42. The commonly used material for shielding is

☐ (A) Lead or concrete

☐ (B) Lead and tin

☐ (C) Graphite or cadmium

☐ (D) Thick galvanized sheets

Correct Answer

43. When a reactor becomes critical, then the production of neutrons is

☐ (A) Infinite

☐ (B) Zero

☐ (C) Exactly balanced by the loss of neutrons through leakage

☐ (D) Initiated

Correct Answer

44. A nuclear unit becoming critical means

☐ (A) It is generating power to rated capacity

☐ (B) It is capable of generating much more than rated capacity

☐ (C) There is danger of nuclear spread

☐ (D) Chain reaction that causes automatic splitting of the fuel nuclei has been established

Correct Answer

45. The predominant isotope of the naturally occurring element is

☐ (A) U_{235}

☐ (B) U_{238}

☐ (C) Pu_{233}

☐ (D) Pu_{239}
[Correct Answer](#)

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(31) Answer: Option B (32) Answer: Option A (33) Answer: Option B (34) Answer: Option C (35) Answer: Option D (36) Answer: Option B (37) Answer: Option D (38) Answer: Option D (39) Answer: Option B (40) Answer: Option A (41) Answer: Option A (42) Answer: Option A (43) Answer: Option C (44) Answer: Option D (45) Answer: Option B

46. The function of control rods in nuclear plants is to

- ☐ (A) Control temperature
 - ☐ (B) Control radioactive pollution
 - ☐ (C) Control absorption of neutron
 - ☐ (D) Control fuel consumption
-

47. Reflector in nuclear plants is used to

- ☐ (A) Return the neutrons back into the core
 - ☐ (B) Shield the radioactivity completely
 - ☐ (C) Check pollution
 - ☐ (D) Conserve energy
-

48. A fission chain reaction in uranium can be developed

- ☐ (A) By increasing the contents of U_{235}
- ☐ (B) By slowing down fast neutrons so that U_{235} fission continues by slow neutron
- ☐ (C) Both (A) and (B)
- ☐ (D) None of these

49. Pick up the wrong statement

- ☐ (A) In a heterogeneous or solid fuel reactor, the fuel is mixed in a regular pattern within moderator
 - ☐ (B) Slow or thermal neutrons have energy of the order of 0.025 eV
 - ☐ (C) Fast neutrons have energies above 1000 eV
 - ☐ (D) Fast reactor uses moderator
-

50. Moderator in nuclear plants is used to

- ☐ (A) Reduce temperature
 - ☐ (B) Extract heat from nuclear reaction
 - ☐ (C) Control the reaction
 - ☐ (D) Cause collision with the fast moving neutrons to reduce their speed
-

51. U_{233} is produced

- ☐ (A) Artificially
 - ☐ (B) As basic raw material
 - ☐ (C) When thorium is irradiated by neutrons
 - ☐ (D) By fission of U_{238}
-

52. Solid fuel for nuclear reactions may be fabricated into various small shapes such as

- ☐ (A) Plates
 - ☐ (B) Pallets
 - ☐ (C) Pins
 - ☐ (D) Any one of the above
-

53. In fast breeder reactors

- ☐ (A) Any type of moderator can be used
 - ☐ (B) Graphite is used as the moderator
 - ☐ (C) Heavy water is used as the moderator
 - ☐ (D) Moderator is dispensed with
-

54. Uranium has isotopes

- ☐ (A) U_{234}
- ☐ (B) U_{235}
- ☐ (C) U_{238}
- ☐ (D) All of these

Correct Answer

55. Each fission of U_{235} produces following number of fast neutrons per fission

- ☐ (A) 1 neutron
- ☐ (B) 3 neutrons
- ☐ (C) 1, 2 neutrons
- ☐ (D) 2 neutrons

Correct Answer

56. Enriched uranium is one in which

- ☐ (A) Percentage of U_{235} has been artificially increased
- ☐ (B) Percentage of U has been artificially increased
- ☐ (C) Percentage of U_{234} has been artificially increased
- ☐ (D) Extra energy is pumped from outside

Correct Answer

57. A fission chain reaction in uranium can be developed by

- ☐ (A) Slowing down fast neutrons so that U_{235} fission continues by slow motion neutrons
- ☐ (B) Accelerating fast neutrons
- ☐ (C) Absorbing all neutrons

☐ (D) [Using moderator](#)
[Correct Answer](#)

58. [The energy released during the fission of one atom of Uranium 235 in million electron volts is about](#)

- ☐ (A) [100](#)
☐ (B) [200](#)
☐ (C) [300](#)
☐ (D) [400](#)

[Correct Answer](#)

59. [Boiling water reactor employs](#)

- ☐ (A) [Boiler](#)
☐ (B) [Direct cycle of coolant system](#)
☐ (C) [Double circuit system of coolant cycle](#)
☐ (D) [Multi passes system](#)

[Correct Answer](#)

60. [The efficiency of a nuclear power plant in comparison to a conventional thermal power plant is](#)

- ☐ (A) [Same](#)
☐ (B) [More](#)
☐ (C) [Less](#)
☐ (D) [May be less or mote depending on size](#)

[Correct Answer](#)

[View All Answers](#)

(46) Answer: Option C (47) Answer: Option A (48) Answer: Option C (49) Answer: Option D (50) Answer: Option D (51) Answer: Option C (52) Answer: Option D (53) Answer: Option D (54) Answer: Option D (55) Answer: Option D (56) Answer: Option A (57) Answer: Option A (58) Answer: Option B (59) Answer: Option B (15) Answer: Option C