UNIT-III

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Multi choice questions (MCQs) with answers

1.   Which of the following is the correct equation for the electrical power generated by the hydroelectric power plant?

a) 75×0.736 wQHη Watt

b) (7.5/0.736) × wQHη Watt

c) 0.845 ×wQHη Watt

d) 9.81 ×wQHη

Answer: c

"Explanation: Rating of any power plant is expressed by its maximum output power. These are large quantities so rating is given in MW.The electrical power generated by this plant is proportional to specific weight of water(w), water head(H), generation efficiency(η), flow rate of water(Q) and acceleration due to gravity."

2.  Which of the following is not a requirement for site selection of hydroelectric power plant?

a) Availability of water

b) Large catchment area

c) Rocky land

d) Sedimentation

Answer: d

"Explanation: Sedimentation may reduce the water storage capacity of reservoir and may also cause damage to the turbine blades. Availability of water, large catchment area and rocky land are primary requirements for site selection of hydroelectric power plant."

3  . The amount of electrical energy that can be generated by a hydroelectric power plant depends upon

a) Head of water

b) Quantity of water

c) Specific weight of water

d) Efficiency of Alternator

Answer: b

"Explanation: Potential energy of large quantity of stored water is used by hydroelectric power plant to generate electrical energy. Head of water is important to get kinetic energy from that potential energy. Efficiency of alternator represents that what percentage of input mechanical power it can convert into electrical power."

4.   Potential energy of water is used to drive the turbine.

a) True

b) False

Answer: b

"Explanation: When water falls, potential energy of water is converted into kinetic energy. This kinetic energy is used to drive the turbine"

5 .  Hydroelectric power plant is

a) Non-renewable source of energy

b) Conventional source of energy

c) Non-conventional source of energy

d) Continuous source of energy

Answer: b

"Explanation: Hydroelectric power plants are conventional source of energy. About 16.6% of total electricity and about 70% of total renewable energy of world is provided by hydroelectric power plants. They are not Non-renewable because water is in exhaustible. It is not continuous source of energy because its output fluctuates with change in flow rate of water with season."

6.   Hydroelectric power plant is generally located near load center.

a) True

b) False

Answer: b

"Explanation: Hydroelectric power plants are generally constructed in hilly areas. These power plants are quite away from the load center."

7 .  Hydroelectric power plant is mainly located in

a) Flat areas

b) Deserts

c) Hilly areas

d) Deltas

Answer: c

"Explanation: In order to get sufficient head, hydroelectric power plants are constructed in hilly areas. In desert and flat areas sufficient water head cannot be obtained. Deltas are not suitable for this because of high sedimentation."

8  . Which statement about hydroelectric power plant is wrong?

a) Efficiency of hydroelectric power plant does not reduce with age

b) Its construction coast is very high and takes a long time for erection.

c) It is very neat and clean plant because no smoke or ash is produced.

d) Meeting rapidly changing load demands is not possible in hydroelectric power plant

. Answer: d

"Explanation: Fluctuating load demands can be met just by controlling the flow of water using valves and gates. Due to its robust construction, its efficiency does not fall with time. Statement ‘b’ is correct because construction of dam, installation of alternator and turbines are very costly."

9  . Which of the following is not an advantage of hydroelectric power plant?

a) no fuel requirement

b) low running cost

c) continuous power source

d) no standby losses

Answer: c

"Explanation: Output of such plants is never constant. This is because of their dependency over flow rate of water in river which is seasonal. No fuel requirement low running cost and no standby losses are advantages of hydroelectric power plants."

10.  Which of the following statement is true about hydroelectric power plant?

a) Hydroelectric power plants are multipurpose.

b) Due to non-uniform flow of water frequency control in such plants is very difficult.

c) Hydroelectric power plant has high running cost

d) Water is used as fuel in hydroelectric power plant

Answer: a

"Explanation: It is because in addition to generation of electricity they are also used for irrigation, flood control etc. Frequency control in such plants is done easily just by controlling flow of water to the turbine through valves and gates. Due to low maintenance cost and no fuel requirement running cost of a plant is very low. Water is not fuel."

11.  Which element of hydroelectric power plant prevents the penstock from water hammer phenomenon?

a) Valves and Gates

b) Draft tubes

c) Spillway

d) Surge Tank

Answer: d

"Explanation: Sudden increase in water pressure in penstock due to closing of gates is called water hammer. Surge tank is a tank at sufficient height, connected to penstock through riser pipe. It takes the rejected water and relives the penstock from excessive water hammer pressure."

12.  Dam having very wide base as compared to its height is called

a) buttress dam

b) arch dam

c) earth dam

d) solid gravity dam

Answer: c

"Explanation: Buttress dams are the concrete dams supported on downstream side by buttresses. Arc dams are concrete dams curved from upstream side. Earth dam is a type of embankment dam and have rock filled inside the structure."

13 . Spillway discharges the overflow water to the downstream side when the reservoir is full.

a) True

b) False

Answer: a

"Explanation: A condition may arise during flood periods when water level increases beyond the capacity of reservoir. In such conditions spillway acts as safety valve."

14.  Trash racks are built for

a) discharging the water freely from the turbine exit to tailrace

b) preventing the turbine from ingress of floating and other materials

c) creating artificial head to store sufficient potential energy of water

d) controlling the opening of valves

Answer: b

"Explanation: Heavy solid materials flowing with water can damage the turbine blades if not stopped. Trash racks are closely spaced flat bars which provides narrow path from which such unwanted materials cannot pass"

15.  Penstock in a hydroelectric power plant is

a) A pipe connected to runner outlet

b) Nozzle that release high pressure water on turbine blades

c) A conduit connecting fore bay to scroll case of turbine

d) A pipe connecting surge tank to dam

Answer: c

"Explanation: Penstocks are the conduit built of steel or reinforced concrete. Penstock connects fore bay or surge tank to scroll case of turbine. Their main function is to carry water from dam to the turbine"

16 . The pressure at the inlet or exit of the draft tube should not be

a) less than one third of atmospheric pressure

b) greater than one third of atmospheric pressure

c) less than one atmospheric pressure

d) greater than one atmospheric pressure

Answer: a

"Explanation: Decrease in pressure in any portion of turbine below one third of atmospheric pressure may cause vapour bubbles or cavities to form. This phenomenon is called cavitation. Also to maintain continuity of flow without vaporization the pressure should not fall below vapour pressure of water."

17 . Draft tube increases the operating head on the turbine.

a) True

b) False

Answer: a

"Explanation: Draft tubes are the pipes of suitable diameter attached to the runner outlet. Draft tube converts the pressure developed by water leaving from turbine into kinetic energy. This in turn increases the operating head on turbine."

18 . Which statement about surge tank is wrong?

a) Ideal location of surge tank is at the turbine inlet

b) A decrease in load demands cause a rise in water level in surge tank

c) Surge tanks are totally closed to avoid entry of unwanted objects to penstock

d) Surge tanks are installed to reduce harm effects of water hammer phenomenon

Answer: c

"Explanation: Function of surge tank is to relieve the penstock from excessive water hammer pressure. It does so by receiving rejected flow of water into the tank. A totally closed tank can not release pressure so usually surge tanks are left open at the top."

19 . Trash racks are located

a) near tailrace

b) at the entrance of turbine

c) inside penstock

d) intake

Answer: d

"Explanation: Intake includes head works at the entrance of conduit. Those head works include different structures, trash racks are one of them. Trash racks are fitted directly at the intake to prevent the floating and other materials from going into the conduit."

20 . What is the function of booms?

a) It supports the dam

b) It supports the penstock

c) It divert the Icebergs from flowing into the penstock

d) To hold the turbine structure

Answer: a

"Explanation: Booms are the one of those structures made at the intake. They are constructed to prevent unwanted solid materials from flowing into the penstock. Solid materials like icebergs, wood logs or other heavy materials which may cause damage to the turbine blades if reached there."

21 . Kaplan turbine is

a) axial flow turbine

b) inward flow turbine

c) tangential flow turbine

d) mixed flow turbine

Answer: a

"Explanation: In Kaplan turbine water strikes the turbine blades axially. That’s why Kaplan turbine is an axial flow turbine. Kaplan turbines are special type of turbines for low head applications."

22 . Pelton turbines are used for

a) medium head applications

b) low head applications

c) in steam power plants

d) for high head applications

Answer: d

"Explanation: Pelton turbines are impulse turbines and are suitable for high head low flow plants. Pelton turbines consist of elliptical shaped buckets along its Periphery. Water is released from nozzle to the buckets of turbine."

23 . Operating head of Francis turbine is

a) less than 30

b) less than 70 m

c) 30 to 200 m

d) more than 200 m

Answer: c

"Explanation: Francis turbines are medium head(30 to 200 m) and medium flow turbines. Using it for low or high head will cause inefficient operation. Their life is about decades so maintenance cost is low."

24 . Governing mechanism used in case of Pelton wheel turbine is

a) guide vane

b) nozzle needle

c) control valve

d) dam gates

Answer:b

"Explanation: During load variation it is necessary to maintain the speed of the alternator constant. This is achieved by controlling the flow of water entering the turbine by the help of automatic adjustment of guide vanes for reaction turbine and the nozzle needle is in case of impulse turbine. Such an operation of speed regulation called governing and the system used to do this is called governor."

25 . Why has nuclear energy become an inevitable option for the development of the country?

a) Because less pollution caused by nuclear plant

b) High efficiency of nuclear energy

c) Due to acute shortage of other sources of energy

d) High cost of energy production of other sources

Answer: c

"Explanation: With the acute shortage of other sources of energy viz. fossil based fuels and hydel sources the use of nuclear energy has become an inevitable option for the both developed and developing country."

26 . How much amount of nuclear energy burnt is equivalent to the energy produced by 3000 tons of coal?

a) 1kg

b) 5kg

c) 15kg

d) 20kg

Answer: a

"Explanation: The amount of heat generated by burning one kg of nuclear fuel is equivalent to the energy generated by burning 3000 tones of coal or 1600 tones of oil. The production of Nuclear energy is carried out by two methods which are nuclear fission and nuclear fusion"

27 . What is the most attractive part of nuclear energy?

a) Supports countries development

b) Causes no pollution

c) Has high efficiency of energy production

d) Is available in abundance

Answer: b

"Explanation: Most attractive part of nuclear energy is that it has no combustion products and under safe working conditions contributes no pollutant to air. Site selection is completely independent of geographical area."

28 . Nucleus consists of two sub-particles known as?

a) Nucleotides

b) Nucleons

c) Neutrons

d) Nucleosides

Answer: b

"Explanation: Atom consists of a relatively heavy, positively charged nucleus and a number of much lighter negatively charged electrons. Electrons exist in various orbits around the nucleus. The nucleus consists of two sub-particles known as nucleons"

29.  On which law is the nuclear energy explained?

a) Einstein’s law

b) Newton’s law

c) Rutherford law

d) Mendeleev law

Answer: a

"Explanation: The nuclear energy is explained the basis of Einstein’s law, one atom may be transformed into another by losing or acquiring some of the above sub-particles. This results in mass change Δm and enormous amount of energy is released (or absorbed). According to Einstein’s law,"ΔE = Δmc2Where, c=light of speed.

30 . Number of protons in the nucleus is called

a) Atomic number

b) Mass number

c) Electric charge

d) Periodic number

Answer: a

"Explanation: Number of protons in the nucleus is called atomic number Z. it is unique for each chemical element, and represents both the number of positive charges on the central massive nucleus of the atom and the number of electrons in orbits around the nucleus."

31.  The total number of nucleons in the nucleus is called

a) Atomic number

b) Mass number

c) Electric charge

d) Periodic number

Answer: b

"Explanation: The total number of nucleons in the nucleus is called the mass number A. Nuclear symbols are written as Zxa Where X is chemical symbol. The masses of atoms are compared on a scale in which an isotope of 6C12 has a mass of exactly 12."

32 . In which of the following process are Neutrons emitted?

a) Inverse beta Decay

b) Nuclear fission

c) Spontaneous Fission

d) Nuclear fusion

Answer: b

"Explanation: Nuclear fission is the process in which a heavy nucleus is split into two or more lighter nuclei. This result in decrease in mass and consequent exothermic energy and emission of neutrons take place. Two to three neutrons are emitted per nucleuses which are known as fission elements."

33 . Why neutrons with lower energy should be capable of causing fission?

a) For faster reaction process

b) For sustained reaction process

c) For Safety purpose

d) In order to not waste the nuclear fuel

Answer: b

"Explanation: Due to collisions with various nuclei, initial high kinetic energy of fission neutron decreases. Thus for a sustained reaction, eve neutrons with lower energy should be capable of causing fission. Only neutrons can result in sustained reaction as two or three neutrons are released for each one absorbed by fission."

34.  What happens when a neutron is absorbed by a nucleus of an atom of U235?

a) Mass number of atom increases

b) One electron is let out

c) U236 isotope is formed

d) Nucleus becomes unstable

Answer: c

"Explanation: When a neutron is absorbed by a nucleus of an atom U235, a U236 isotope is formed. This isotope is highly unstable which lasts for one millionth of a second and splits into two equal parts releasing energy of 200MeV"

35 . Who invented nuclear fission?

a) Rutherford

b) Hans Bethe

c) Otto Hahn

d) Marie Curie

Answer: c

"Explanation: Nuclear fission of heavy metals was discovered by German Otto Hahn on December 17, 1938 and was explained theoretically by Lise Meitner and her nephew Otto Robert Frisch on 1939. Frisch named Frisch names the process by analogy with biological fission of living cells."

36.  Most of the energy released in fission process is in process of

a) Kinetic Energy

b) Thermal Energy

c) Light Energy

d) Heat Energy

Answer: a

"Explanation: Most of the energy released is in the form of kinetic energy and is absorbed by fission products. The fission products formed are fission fragments, neutrons and electromagnetic or gamma radiation. As the fragments collide, the kinetic energy is converted into heat energy."

37.  Combining of two light nuclei of low mass to produce a heavy nucleus is called

a) Nuclear fusion

b) Nuclear fission

c) Spontaneous fission

d) Double beta decay

Answer: a

"Explanation: Nuclear fusion is the process which involves fusion of two light nuclei of low mass to produce a heavy nucleus which results in decrease of mass and release of enormous amount of energy. All atomic bombs prefer nuclear fission process."

38.  What type of Reaction takes place in sun?

a) Nuclear fusion

b) Nuclear fission

c) Spontaneous fission

d) Double beta decay

Answer: a

"Explanation: Nuclear fusion reaction takes place in sun as well as stars. The process is carried by proton-proton chain. The sun starts with protons, and through a series of steps, turns them into helium. Every second 600 million tons of hydrogen is converted into helium. The reaction releases tremendous amount of heat and energy"

39.The function of a moderator is to

1. absorb the part of the Kinetic energy of the neutrons
2. extract the heat
3. reflect back some of the neutrons
4. start the reactor

Answer: a

40.Which of the following is not used as moderator?

1. water
2. heavy water
3. graphite
4. boron

Answer: d

41.When the control rods are inserted into the reactor, K (Multiplication factor) becomes

1. 0
2. ˃1
3. 1
4. <1

Answer: d

42.The function of coolant is to

1. extract heat from reactor
2. slow down neutrons
3. control the reaction
4. reflect the neutrons

(Ans:a)

43.Which of the following has highest moderating ratio?

1. D2O
2. H2O
3. Carbon
4. Helium

(Ans:a)

44.The reactor performs the following function as that of \_ in a steam power plant.

1. furnace
2. turbine
3. electric generator
4. boiler

(Ans:a)

45.In pressurized water reactor

1. light water is used as coolant
2. light water is used as coolant and moderator
3. heavy water is used as coolant
4. heavy water is used as coolant and moderator

(Ans:b)

46.In which of the following reactors, heat exchanger is not used?

1. Pressurized water reactor
2. Boiling water reactor
3. CANDU reactor
4. Gas cooled reactor

(Ans:b)

47.In Canadium Deuterium Uranium reactor (CANDU), heavy water is used as

1. Moderator
2. Coolant
3. Neutron reflector
4. All of the above

Answer: d

48.In Canadium Deuterium Uranium reactor (CANDU), the control rods are made of

1. Cadmium
2. Boron steel
3. Graphite
4. Beryllium

(Ans:a)

49.Gas cooled reactors are \_\_\_\_\_ moderated.

1. Light water
2. Heavy water
3. Graphite
4. Beryllium

(Ans:c)

50.In Sodium-Graphite reactor, sodium is used as

1. Coolant
2. Moderator
3. Reflector
4. All of the above

(Ans:a)

51.In which of the following, an intermediate heat exchanger is used

1. Pressurized water reactor
2. Boiling water reactor
3. Gas cooled reactor
4. Liquid metal cooled reactor

Answer: d

52.Moderator is not required in

1. Pressurized water reactor
2. Gas cooled reactor
3. Boiling water reactor
4. Breeder reactor

Answer: d

53.The first [nuclear power plant](https://www.mechanicaltutorial.com/nuclear-power-plant-advantages-and-disadvantages-of-nuclear-power-stations) in the world was commissioned in.......

1. A.U.S.A.
2. B.U.S.S.R
3. C.England
4. D.None of the above

Ans-b

54.In all plant minimum quality of fuel is required in........

1. A.Thermal power plant
2. B.Hydro electric power plant
3. C.Nuclear power plant
4. D.Gas turbine plant

Ans-c

55. Energy is released from fossil fuels when they are

1. Pumped
2. Cooled
3. Burned
4. Pressurized Answer: c

Explanation: Fossil fuels are fuels because they release heat energy when they are burned. They are fossil fuels

because they were formed from the remains of living organisms billions of years ago. Some of the examples of fossil fuels are coal, oil and natural gas.

56.The most nuclear fuel used in the world is

1. Thorium – 232
2. Uranium – 238
3. Uranium – 235
4. Plutonium –Answer: c

Explanation: The most used nuclear fuel is Uranium – 235. It is a radioactive metal. Nuclear fuels like Uranium do not burnt to release energy. Instead, the fuels are involved in nuclear reaction in nuclear reaction in the nuclear reactor.

57.The blades in wind turbines are connected to

1. Nacelle
2. Tower
3. Foundations
4. String Answer: a

Explanation: A nacelle is a cover housing that houses all of the generating components in a wind turbine. Wind

turbines have huge blades mounted on a tall tower. The blades are connected to a nacelle. Thus the nacelle in wind turbines helps to work the wind turbines.

58.In the production of wave energy which form of energy is used?

1. Potential energy
2. Kinetic energy
3. Solar energy
4. Wind Answer: b

Explanation: The water in the sea rises and falls because of waves on the surface. Wave machines use the KE.

energy in this movement to drive electricity generators. Wave energy also known as ocean energy. Wave energy is essentially power drawn from waves.

59. 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

Answer-D

60.In hydroelectricity power

1. Kinetic energy is transferred to potential
2. Potential energy is transferred to kinetic
3. Solar energy is transferred to wind energy
4. Wind energy is transferred to solar

Answer: b

Explanation: Hydroelectricity power stations use the kinetic energy in moving water. But the water comes from behind a dam built across a river valley. The water high up behind the dam contains potential energy.

61.Solar panels generate electricity.

1. True
2. False

Answer: b

Explanation: Solar panels do not generate electricity. They just heat up water by the external electricity connection given to them. This solar panels are often located on the roofs of the building where they can receive heat energy directly from the sun.

62.In order to produce solar energy during sunlight, where the energy is stored in the batteries?

1. Nickel Sulfur
2. Zinc Cadmium
3. Nickel Cadmium
4. Nickel Answer: c

Explanation: Nickel Cadmium cells offers along service life thereby ensuring a high degree of the economy. In the PV industry, Nickel Cadmium battery cells are majorly used for the energy storage technology from manufacturers and users of PV of grid systems.

63.How many forms of fossil fuels are there

1. One
2. Two
3. Three
4. Four

Answer: c

Explanation: There are three major forms of fossil fuels they are coal, oil and natural gas. They formed from organic remains of plants and animals that were converted into coal, oil and natural gas by exposure to heat and the pressure of the earth’s crust over millions of years.

64. The most commonly used moderator in nuclear plants is

(A) Heavy water

(B) Concrete and bricks

(C) Graphite and concrete

(D) Graphit

Answer-D

65. Reactors for propulsion applications are designed for

(A) Any form of uranium

(B) Natural uranium

(C) Enriched uranium

(D) Plutonium

Answer-C

66. The following present serious difficulty in designing reactor shield

(A) Alpha particles

(B) Beta particles

(C) Thermal neutrons

(D) Fast neutrons and gamma rays

Answer-D

67. 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

Answer-D

68. Reflector in nuclear power plants \_\_\_\_\_\_\_\_\_ neutron leakage.

(A) Increases

(B) Decreases

(C) Have no effect on

(D) None of these

Answer-B

69. Effective moderators are those materials which contain

(A) Light weight atoms

(B) Heavy weight atoms

(C) Critical atoms

(D) Zero weight atoms

Answer-A

70. 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

Answer-B

71. 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

Answer-D

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

(A) X-rays

(B) Infrared rays

(C) Neutrons and gamma rays

(D) Electrons

Answer-D

73. 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

Answer-C

74. The coolant used in boiling water reactor is

(A) CO2

(B) Pressurized water

(C) Mixture of water and steam

(D) Liquid metal

Answer-C

75. A moderator

(A) Absorbs neutrons

(B) Does not absorb neutrons

(C) Accelerates neutrons

(D) None of these

Answer-B

76.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

Answer-C

77. 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

Answer-A

78. A fission chain reaction in uranium can be developed

(A) By increasing the contents of U₂₃₅

(B) By slowing down fast neutrons so that U₂₃₅ fission continues by slow neutron

(C) Both (A) and (B)

(D) None of these

Answer-C

79. 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 or 0.025 eV

(C) Fast neutrons have energies above 1000 eV

(D) Fast reactor uses moderator

Answer-D

80. 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

Answer-D

81. U₂₃₃ is produced

(A) Artificially

(B) As basic raw material

(C) When thorium is irradiated by neutrons

(D) By fission of U₂₃₈

Answer-C

82.How are active liquids of nuclear waste disposed?

1. Stored in concrete tanks and buried underground
2. Stored in concrete tanks and buried in sea
3. Mixed with other chemicals and left into free atmosphere
4. They are reused and burnt away in gases.

Answer: a

Explanation: Active liquids are kept in concrete tanks and these tanks are buried in the ground till their decay of radio activity. Many times the radio activity increases the temperature of the liquid waste or sometimes these liquids boil and the activity decreases with time.

83.What are the ways in which most of radio activeness is removed?

1. Infusing them with other metal
2. Neutralizing them by diluting in chemical solutions
3. Storing them
4. Segregating them into small

ANS-C

84.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

Answer-B

85. 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

Answer-D

86. 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

Answer-A

87. Electron volt is the unit of

(A) Atomic power

(B) Energy

(C) Voltage

(D) Radio activity

Answer-B

88. 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

Answer-A

89. 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

Answer-B

90. 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

Answer-D

91. 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-D

92. The nuclear energy is measured as

(A) MeV

(B) Curie

(C) Farads

(D) MW

Answer-A

93. 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

Answer-B

94. A boiling water reactor uses following as fuel

(A) Enriched uranium

(B) Plutonium

(C) Thorium

(D) U

Answer-A

95. 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

Answer-D

96. 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

Answer-D

97. Artificial radioactive isotopes find application in

(A) Power generation

(B) Nucleonic devices

(C) Nuclear fission

(D) Medical field

Answer-D

98. Each fission of U₂₃₅ produces on the average \_\_\_\_\_\_\_\_\_ fast neutrons as a product of reaction.

(A) 2.46

(B) 24.6

(C) 246

(D) 2460

Answer-A

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

(A) Splitting

(B) Fission

(C) Fusion

(D) Disintegration

Answer-B

100. 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

Answer-A

101. 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

Answer-D

102. 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

Answer-D

103. Uranium has isotopes

(A) U₂₃₄

(B) U₂₃₅

(C) U₂₃₈

(D) All of these

Answer-D

104. Each fission of U₂₃₅ produces following number of fast neutrons per fission

(A) 1 neutron

(B) 3 neutrons

(C) 1, 2 neutrons

(D) 2 neutrons

Answer-D

105. Enriched uranium is one in which

(A) Percentage of U₂₃₅ has been artificially increased

(B) Percentage of U has been artificially increased

(C) Percentage of U₂₃₄ has been artificially increased

(D) Extra energy is pumped from outside

Answer-A

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

(A) Slowing down fast neutrons so that Uz fission continues by slow motion neutrons

(B) Accelerating fast neutrons

(C) Absorbing all neutrons

(D) Using moderator

Answer-A

107. 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

Answer-B

108. Boiling water reactor employs

(A) Boiler

(B) Direct cycle of coolant system

(C) Double circuit system of coolant cycle

(D) Multi passes system

Answer-B

109. 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

Answer-C

110.The material most commonly used for shielding is

(A) Carbon

(B) Lead

(C) Concrete

(D) All of these

Answer-C

END