



**MCQs Related to the Article "21.1 ATOMIC NUCLEUS"**

- Neutron and proton are commonly known as \_\_\_\_\_  
 (a) Nucleons (b) Meson (c) Boson (d) Quartz
- The mass of proton is equal to:  
 (a)  $1.675 \times 10^{-19} \text{ kg}$  (b)  $1.673 \times 10^{-27} \text{ kg}$  (c)  $9.1 \times 10^{-31} \text{ kg}$  (d) None of these
- One unified mass scale ( $1 \mu$ ) is equal to:  
 (a)  $1.6606 \times 10^{-27} \text{ kg}$  (b)  $1.7606 \times 10^{-27} \text{ kg}$   
 (c)  $1.8606 \times 10^{-27} \text{ kg}$  (d) None of these
- The number of neutrons in  ${}^{238}_{92}\text{U}$  is:  
 (a) 92 (b) 238 (c) 146 (d) 330
- The numbers of protons in an atom are always equal to the number of:  
 (a) Neutrons (b) Electrons (c) Positrons (d) Mesons
- Charge on neutron is \_\_\_\_\_  
 (a)  $1.6 \times 10^{-19} \text{ C}$  (b)  $-1.6 \times 10^{-19} \text{ C}$  (c) No definite charge (d) Zero
- Mass of neutron is \_\_\_\_\_  
 (a)  $1.67 \times 10^{-13} \text{ kg}$  (b)  $1.67 \times 10^{-27} \text{ kg}$  (c)  $9.1 \times 10^{-31} \text{ kg}$  (d)  $1.67 \times 10^{-19} \text{ kg}$
- The number of protons in any atom are always equal to the number of:  
 (a) Electrons (b) Neutrons (c) Positrons (d) Mesons
- According to which one of following law, the density of nucleus is uniform ?  
 (a) J.J. Thomson (b) Rutherford's Model  
 (c) Bohr's Model (d) All of above laws
- The number of neutrons in  ${}^7_3\text{Li}$  is:  
 (a) 3 (b) 7 (c) 4 (d) 2

MCQ # 1: (a)	MCQ # 2: (b)	MCQ # 3: (a)	MCQ # 4: (c)	MCQ # 5: (b)
MCQ # 6: (d)	MCQ # 7: (b)	MCQ # 8: (a)	MCQ # 9: (a)	MCQ # 10: (c)

**MCQs Related to the Article "21.2 ISOTOPES"**

- Nuclei having the same mass number but different atomic number are \_\_\_\_  
 (a) Isomers (b) Isobars (c) Isotones (d) Isotopes
- Hydrogen is also called:  
 (a) Deuterium (b) Tritium (c) Protium (d) All of these
- A mass spectrograph sorts out \_\_\_\_  
 (a) Molecules (b) Ions (c) Elements (d) Isotopes
- Both xenon and cesium each have  
 (a) 24 isotopes (b) 28 isotopes (c) 32 isotopes (d) 36 isotopes
- Number of isotopes of Neon gas are:  
 (a) 2 (b) 3 (c) 4 (d) 1
- The chemical properties of any element depend on its:  
 (a) Number of isotopes (b) Number of isobars  
 (c) Atomic number (d) Mass number
- Number of isotopes of Helium is:  
 (a) 2 (b) 3 (c) 4 (d) 5
- Nuclei having the same mass number but different atomic number are \_\_\_\_  
 (a) Isotopes (b) Isobars (c) Isotones (d) Isomers

MCQ # 1: (d)	MCQ # 2: (d)	MCQ # 3: (d)	MCQ # 4: (d)	MCQ # 5: (b)
MCQ # 6: (c)	MCQ # 7: (a)	MCQ # 8: (b)		

**MCQs Related to the Article "21.3 MASS DEFECT AND BINDING ENERGY"**

- Sum of the masses of constituent nucleons as compared to the mass of the resultant nucleus is \_\_\_\_\_  
 (a) Smaller (b) Greater (c) Same (d) Can't Predict
- The binding energy per nucleon for iron is:  
 (a) Zero (b) Negative (c) Minimum (d) Maximum
- Binding energy for deuteron nucleus is given by:  
 (a) 2.8 MeV (b) 2.23 MeV (c) 2.28 MeV (d) 2.25 MeV

4. The value of 1  $\mu$  mass = \_\_\_\_\_  
 (a) 931 MeV (b) 932 MeV (c) 933 MeV (d) 934 MeV

MCQ # 1: (b)	MCQ # 2: (d)	MCQ # 3: (b)	MCQ # 4: (a)
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**MCQs Related to the Article "21.4 RADIOACTIVITY"**

- Which one of the following is similar to electrons:  
 (a)  $\alpha$  -particles (b)  $\beta$  -particles (c)  $\gamma$  -particles (d) Neutrino
- Which one is better shield against  $\gamma$  -rays:  
 (a) Wood (b) Lead (c) Aluminum (d) Water
- When a  $\beta$ -particle is emitted out of any nucleus, then its mass number is:  
 (a) Increased (b) Remain same (c) Decrease (d) Infinity
- $\gamma$  -Emission from the nucleus of an atom causes:  
 (a) Change in Z (b) Change in A (c) Change in both A & Z (d) No change in A & Z
- Marie Curie and Pierre Curie discovered two new radioactive elements which are:  
 (a) Uranium & Radium (b) Platinum and Radium  
 (c) Polonium and Radium (d) Crypton and Radium
- Which of the following have no charge:  
 (a)  $\alpha$  - rays (b)  $\beta$  - rays (c)  $\gamma$  - rays (d) Cathode rays
- The charge on an alpha particle is:  
 (a)  $+2e$  (b)  $-2e$  (c)  $+e$  (d)  $-2e$
- When alpha particle is emitted out of any nucleus, then due to law of conservation of matter, the mass number of the nucleus is decreases by:  
 (a) 1 (b) 2 (c) 3 (d) 4
- The element formed by radioactive decay is called:  
 (a) Father element (b) Mother element (c) Parent element (d) Daughter element
- Which of the following equation represents  $\beta$  -decay?  
 (a)  ${}^A_ZX \rightarrow {}^A_{Z+1}Y + {}^0_{-1}e$  (b)  ${}^A_ZX \rightarrow {}^{A-1}_ZY + {}^0_{-1}e$   
 (c)  ${}^A_ZX \rightarrow {}^{A+1}_{Z+1}Y + {}^0_{-1}e$  (d)  ${}^A_ZX \rightarrow {}^{A-1}_{Z+1}Y + {}^0_{-1}e$
- By emitting  $\beta$  -particle and  $\gamma$  -particle simultaneously, the nucleus changes its charge by:  
 (a) Losses by 1 (b) Increases by 1 (c) Increases by 2 (d) Remain same
- Radioactivity happens due to disintegration of:  
 (a) Nucleus (b) Mass (c) Electrons (d) Protons
- An  $\alpha$  -particle contains:  
 (a) 1 proton & 1 neutron (b) 1 proton & 2 neutron  
 (c) 2 proton & 1 neutron (d) 2 proton & 2 neutron

MCQ # 1: (b)	MCQ # 2: (b)	MCQ # 3: (b)	MCQ # 4: (d)	MCQ # 5: (c)	MCQ # 6: (c)	MCQ # 7: (a)	MCQ # 8: (d)
MCQ # 9: (d)	MCQ # 10: (a)	MCQ # 11: (b)	MCQ # 12: (a)	MCQ # 13: (d)			

**MCQs Related to the Article "21.5 HALF LIFE"**

- The rate of decay of a radioactive substance:  
 (a) Remains constant with time (b) Increases with time  
 (c) Decreases with time (d) May increase or decrease with time
- Half-life of the iodine-131 is 8 days and its weight is 20 mg. After 4 half-lives, the amount left undecayed will be:  
 (a) 2.5 mg (b) 1.25 mg (c) 0.625 mg (d) 0.3112 mg
- The reciprocal of decay constant ( $\lambda$ ) of a radioactive element is:  
 (a) Half-life (b) Mean Life (c) Total life (d) Curie
- The half-life of radon gas is:  
 (a) 1620 years (b)  $4.5 \times 10^9$  years (c) 3.8 days (d) 23.5 minutes
- The half-life of uranium-238 is:  
 (a) 1620 years (b)  $4.5 \times 10^9$  years (c) 3.8 days (d) 23.5 minutes
- Half-life of Radium is 1590 years. In how many years shall the earth loss all his radium due to radioactive decay?  
 (a)  $1590 \times 10^6$  years (b)  $1590 \times 10^{12}$  years  
 (c)  $1590 \times 10^{24}$  years (d) Never
- The unit of decay constant  $\lambda$  is:  
 (a) m (b)  $m^{-1}$  (c)  $s^{-1}$  (d)  $m s^{-1}$

8. A sample contains  $N$  radioactive nuclei. After 4 half-lives, number to nuclei decayed will be:

- (a)  $\frac{N}{16}$  (b)  $\frac{15N}{16}$  (c)  $\frac{N}{8}$  (d)  $\frac{7N}{8}$

9. The half-life of a radioactive element depends upon:

- (a) Pressure (b) Temperature (c) Amount of Substance (d) No external influence

10. After two half-lives, the number of undecayed nuclei of an element are:

- (a)  $N$  (b)  $\frac{N}{2}$  (c)  $\frac{N}{4}$  (d)  $\frac{3N}{4}$

11. Radioactive materials can be identified by measuring their \_\_\_\_\_

- (a) Hardness (b) Density (c) Mass (d) Half life

12. If a radioactive isotope of silver have a half-life of about 7.5 days. After 15 days the remaining isotope of its original is

- (a) 25% (b) 50% (c) 7.5% (d) 15%

13. The relation between the decay constant  $\lambda$  and half life  $T_{1/2}$  is given by:

- (a)  $T_{1/2} = \frac{0.693}{\lambda}$  (b)  $T_{1/2} = 1.43 \lambda$  (c)  $T_{1/2} = 0.693\lambda$  (d)  $T_{1/2} = \frac{1.43}{\lambda}$

14. Radioactive decay obeys which one of the following data?

- (a)  $N = N_0 e^{-\lambda t}$  (b)  $N = N_0 e^{\lambda t}$  (c)  $N = N_0 e^{-\frac{\lambda t}{2}}$  (d)  $N_0 = N e^{-\lambda t}$

15. Hal- life of radium-226 is:

- (a) 1820 years (b) 1920 years (c) 1620 years (d) 1680 years

MCQ # 1: (c)	MCQ # 2: (b)	MCQ # 3: (b)	MCQ # 4: (c)	MCQ # 5: (b)	MCQ # 6: (d)	MCQ # 7: (c)	MCQ # 8: (b)
MCQ # 9: (d)	MCQ # 10: (c)	MCQ # 11: (d)	MCQ # 12: (a)	MCQ # 13: (a)	MCQ # 14: (a)	MCQ # 15: (c)	

### MCQs Related to the Article "21.6 INTERACTION OF RADIATION WITH MATTER"

1. The mass of beta particles is equal to the mass of

- (a) Protons (b) Electrons (c) Neutrons (d) Boron

2. Which particle has large range in air:

- (a)  $\alpha$  -particles (b)  $\beta$  -particles (c)  $\gamma$  -rays (d) Neutrons

3. Speed of  $\beta$  -particles is nearly equal to:

- (a)  $1 \times 10^8 \text{ m s}^{-1}$  (b)  $1 \times 10^7 \text{ m s}^{-1}$  (c)  $3 \times 10^8 \text{ m s}^{-1}$  (d)  $1 \times 10^6 \text{ m s}^{-1}$

4. The charge on  $\beta$  -particle is:

- (a)  $+e$  (b)  $-e$  (c)  $+2e$  (d)  $-2e$

5.  $\gamma$  -rays emitted from radioactive element have speed:

- (a)  $1 \times 10^{18} \text{ m s}^{-1}$  (b)  $1 \times 10^7 \text{ m s}^{-1}$  (c)  $3 \times 10^8 \text{ m s}^{-1}$  (d)  $4 \times 10^{19} \text{ m s}^{-1}$

6. Cobalt-60 is the source for:

- (a)  $\alpha$  -particles (b)  $\beta$  -particles (c)  $\gamma$  -rays (d) Neutrons

7. How many times, the  $\alpha$  -particle is more massive than electrons?

- (a) 6332 (b) 7332 (c) 8332 (d) 9332

8. Which one of the following radiation possesses maximum penetrating power?

- (a)  $\alpha$  - rays (b)  $\beta$  - rays (c)  $\gamma$  - rays (d) All have equal penetrating power

9. Which one of the following possesses maximum velocity?

- (a)  $\alpha$  - rays (b)  $\beta$  - rays (c)  $\gamma$  - rays (d) All of the above have same speed

10. During an encounter with an atom  $\alpha$  - particle knocks out \_\_\_\_\_

- (a) Protons (b) Electrons (c) Neutrons (d) Nothing

11.  $\beta$  -particle ionizes an atom \_\_\_\_\_

- (a) Through direct collision (b) Through electrostatic attraction

- (c) Through electrostatic repulsion (d) All of above

12. The penetration power of  $\beta$  - particle as compared to  $\alpha$  -particle is \_\_\_\_\_

- (a) 10 times more (b) 100 times more (c) 100 times less (d) 10 times less

13. A  $\alpha$  - particle can produce fluorescence in \_\_\_\_\_

- (a) ZnS (b) Barium Palatino cyanide

- (c) Calcium tunzstate (d) All of above

14. Average distance covered by  $\alpha$  - particle in air before its ionizing power ceases is called its \_\_\_\_\_

- (a) Trajectory (b) Range (c) Firing level (d) Limit

15.  $\beta$  -particles possess greater penetration power then that of a-particle due to its \_\_\_\_\_

- (a) Smaller ionization power (b) Energy is not conserved

- (c) Neither greater nor smaller ionization power (d) Same ionization power

- 16. Pair production can take places only with \_\_\_\_\_**  
 (a) X-rays (b)  $\gamma$  - rays (c) UV-rays (d) IR-rays
- 17. The  $\alpha$  - particle ionizes the particles in its way and adopt the path which is**  
 (a) Curved (b) Straight (c) Zig-Zag (d) None of these
- 18. Neutron interact with materials containing hydrogen atoms and knock out**  
 (a) Electron (b) Proton (c) Photon (d) None of these
- 19. Neutron produce ionization by knocking out proton which is**  
 (a) Direct ionization (b) Indirect ionization (c) Both (d) None of these
- 20.  $\gamma$  - rays are absorbed by a sheet of**  
 (a) 1-5 mm of lead (b) 1-10 cm of lead (c) 5 -10 mm of lead (d) None of these
- 21. Ultraviolet radiation cause**  
 (a) Sun burn (b) Blindness (c) Skin Cancer (d) All of them
- 22. Neutrons are particularly more damaging to**  
 (a) Legs (b) Heart (c) Eyes (d) Brain
- 23. Electron is an antiparticle of:**  
 (a) Proton (b) Photon (c) Positron (d) Deutron
- 24. Which of the following has no charge?**  
 (a) Alpha rays (b) Beta rays (c) Gamma rays (d) Cathode rays

MCQ # 1: (b)	MCQ # 2: (c)	MCQ # 3: (a)	MCQ # 4: (b)	MCQ # 5: (c)	MCQ # 6: (c)	MCQ # 7: (b)	MCQ # 8: (c)
MCQ # 9: (c)	MCQ # 10: (b)	MCQ # 11: (c)	MCQ # 12: (b)	MCQ # 13: (d)	MCQ # 14: (b)	MCQ # 15: (a)	MCQ # 16: (b)
MCQ # 17: (b)	MCQ # 18: (b)	MCQ # 19: (b)	MCQ # 20: (b)	MCQ # 21: (d)	MCQ # 22: (c)	MCQ # 23: (c)	MCQ # 24: (c)

**MCQs Related to the Article "21.7 RADIATION DETECTORS"**

- 1. A detector that can count fast and operate at low voltage is:**  
 (a) G M counter (b) Solid State Detector (c) Wilson Cloud Chamber
- 2. In Wilson cloud chamber, we use:**  
 (a) Alcohol vapours (b) Neon gas (c) Bromine gas (d) Water vapours
- 3. The  $\alpha$  –particles have tracks**  
 (a) Thick (b) Straight (c) Continuous (d) All a, b & c
- 4. The  $\beta$  –particles have tracks**  
 (a) Thin (b) Discontinuous (c) Continuous (d) Both a & b
- 5. The  $\gamma$  –rays have**  
 (a) Thick tracks (b) Thin tracks (c) No definite tracks (d) Continuous tracks
- 6.  $\beta$  - particles in Wilson cloud chamber have:**  
 (a) zigzag or erratic path (b) Curved path  
 (c) Circular Path (d) Elliptical path
- 7. A high potential difference of \_\_\_\_\_ is used in G.M. counter.**  
 (a) 400 V (b) 1000 V (c) 5000 V (d) 4000 V
- 8. Geiger counter is suitable for \_\_\_\_\_**  
 (a) Fast counting (b) Extremely fast counting  
 (c) Slow counting (d) All situations
- 9. A device for producing high velocity nuclei is \_\_\_\_\_**  
 (a) Cloud chamber (b) Linear acceleration  
 (c) A mass spectrograph (d) Wilson cloud
- 10. The quenching of gas by a quenching gas is called**  
 (a) Quenching (b) Self quenching (c) Forced quenching (d) None of these
- 11. The dead time of Geiger Muller counter is of the order of**  
 (a) Micro second (b) Milli second (c) More than millisecond (d) None of these
- 12. A device which shows the visible path of ionizing particle is called:**  
 (a) GM counter (b) Solid Detector (c) Scaler (d) Wilson Cloud Chamber

MCQ # 1: (b)	MCQ # 2: (a)	MCQ # 3: (d)	MCQ # 4: (d)	MCQ # 5: (c)	MCQ # 6: (a)	MCQ # 7: (a)	MCQ # 8: (c)
MCQ # 9: (b)	MCQ # 10: (b)	MCQ # 11: (c)	MCQ # 12: (d)				

**MCQs Related to the Article "21.8 NUCLEAR REACTIONS"**

- 1. When Nitrogen is bombard by alpha particles, nitrogen nucleus changes into:**  
 (a) Oxygen (b) Carbon (c) Berium (d) Helium
- 2. Complete the reaction  ${}_Z X^A \rightarrow {}_{Z+1} X + {}_{-1} \beta^0 + \dots + Q$**   
 (a) Neutrino (b) Antineutrino (c)  $\alpha$  - particle (d) None



3. A nuclide  ${}_{86}R^{220}$  decays to a new nuclide by two  $\alpha$  -emissions, the nuclide S is  
 (a)  ${}_{84}S^{212}$  (b)  ${}_{82}S^{212}$  (c)  ${}_{80}S^{220}$  (d) None
4. An  $\alpha$  - particle is emitted from  ${}_{88}Ra^{226}$ , what is the mass and atomic number of the daughter nucleus?  
 (a)  $A = 224$  &  $Z = 84$  (b)  $A = 220$  &  $Z = 80$  (c)  $A = 222$  &  $Z = 86$  (d)  $A = 226$  &  $Z = 87$
5. Neutron was discovered by:  
 (a) Rutherford (b) Chadwick (c) Becquerel (d) Curie

MCQ # 1: (a)	MCQ # 2: (a)	MCQ # 3: (b)	MCQ # 4: (c)	MCQ # 5: (b)
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#### MCQs Related to the Article "21.9 NUCLEAR FISSION"

1. The quantity of  ${}_{92}^{235}U$  in naturally occurring uranium is:  
 (a) 0.1 % (b) 0.2 % (c) 0.3 % (d) 0.7 %
2. In fast reactor,  ${}_{92}^{238}U$  nucleus absorbs fast neutrons and is ultimately transformed into \_\_\_\_\_ by emitting  $\beta$  -radiation:  
 (a)  ${}_{92}^{235}U$  (b)  ${}_{94}^{239}Pu$  (c)  ${}_{82}^{208}Pb$  (d)  ${}_{90}^{232}Th$
3. Nuclear fission chain reaction is controlled by using:  
 (a) Steel rod (b) Graphite rods (c) Cadmium rod (d) Plutonium rods
4. For chain reaction to buildup, the size of the radioactive target should be \_\_\_\_  
 (a) Greater than the critical size (b) Less than the critical size (c) Equal to critical size
5. Energy liberated when one atom of U-235 undergoes fission reaction is \_\_\_\_  
 (a) 200 MeV (b) 40 MeV (c) 30 MeV (d) 20 MeV
6. Tick the correct statement  
 (a) Moderator slow down the neutron (b) Moderator bring the neutrons to rest  
 (c) Moderator absorb the neutron (d) Moderator reflect the neutron
7. Fission nuclear reaction leads to a \_\_\_\_ stability.  
 (a) Lesser (b) Greater (c) Medium (d) None
8. Plutonium can be fissioned by  
 (a) Slow neutron (b) Fast neutron (c) Very slow neutron (d) None of these
9. In liquid metal fast breeder reactor, the type of uranium used is \_\_\_\_  
 (a)  ${}_{92}U^{235}$  (b)  ${}_{92}U^{238}$  (c)  ${}_{92}U^{234}$  (d)  ${}_{92}U^{239}$
10. If one or more of the neutrons emitted during fission can be used to build up further fission then the reaction is self-sustained and is known as \_\_\_\_  
 (a) Fission reaction (b) Fusion reaction (c) Chain reaction (d) Chemical reaction
11. The breakage of  ${}_{92}^{235}U$  produces the fragments as  
 (a) Kr and Ba (b) Sn and Mo (c) Xe and Sr (d) All of them
12. The fuel / fuels used in the reactor are nowadays  
 (a) Plutonium - 239 (b) Uranium - 233 (c) Uranium - 235 (d) All of these
13. In nuclear reactor, Uranium is enriched upto:  
 (a) 1% to 2 % (b) 1% to 3 % (c) 2% to 3 % (d) 2% to 4 %

MCQ # 1: (d)	MCQ # 2: (b)	MCQ # 3: (c)	MCQ # 4: (a)	MCQ # 5: (a)	MCQ # 6: (a)	MCQ # 7: (b)	MCQ # 8: (b)
MCQ # 9: (b)	MCQ # 10: (c)	MCQ # 11: (d)	MCQ # 12: (d)	MCQ # 13: (d)			

#### MCQs Related to the Article "21.10 FUSION REACTION"

1. The energy emitted from sun is due to:  
 (a) Fission reaction (b) Fusion reaction (c) Chemical reaction (d) Pair production
2. The energy released by fusion of two deuterons into a Helium nucleus is about:  
 (a) 24 MeV (b) 200 MeV (c) 1.02 MeV (d) 7.7 MeV
3. The nuclear reaction taking place in sun is:  
 (a) Fission (b) Fusion (c) Chain (d) Alpha decay

MCQ # 1: (b)	MCQ # 2: (a)	MCQ # 3: (b)
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#### MCQs Related to the Article "21.11 RADIATION EXPOSURE"

1. The cosmic radiations consist of:  
 (a) High energy particles (b) Electromagnetic radiation  
 (c) Low energy charged particles (d) Both a & b
2. Antimatter consists of \_\_\_\_  
 (a) Antiproton (b) Antineutron (c) Positron (d) All of above

3. A particle having the mass of an electron and the charge of a proton is called

- (a) Antiproton (b) Positron (c) Gamma rays (d) Photon

4. Color television (while operating) emits:

- (a)  $\alpha$  -rays (b)  $\beta$  -rays (c)  $\gamma$  -rays (d) X -rays

MCQ # 1: (d)	MCQ # 2: (d)	MCQ # 3: (b)	MCQ # 4: (d)
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**MCQs Related to the Article "21.12 BIOLOGICAL EFFECTS OF RADIATION"**

1. The SI unit for radioactivity is called

- (a) Curie (b) Becquerel (c) Bel (d) None of these

2. One joule of energy absorbed in a body per kilogram is equal to:

- (a) One rad (b) One rem (c) One gray (d) One sievert

3. One curie is equal to:

- (a)  $3.70 \times 10^{-10} Bq$  (b)  $3.70 \times 10^{10} Bq$  (c) 1 Bq (d)  $10^3 Bq$

4. One gray ( $G_y$ ) is equal to

- (a)  $1 J^{-1} kg^{-1}$  (b)  $1 J^{-1} kg^{-2}$  (c)  $1 J kg^{-2}$  (d)  $1 J kg^{-1}$

5. The average of background radiation to which we are exposed per year:

- (a) 2 mSv (b) 1 mSv (c) 3 mSv (d) 0.01 Sv

6. Absorbed dose D is defined as:

- (a) m/E (b) E/C (c) C/m (d) E/m

7. SI unit of absorbed dose is:

- (a) Gray (b) Roentgen (c) Curie (d) Rem

8. The maximum safe limit weekly dose for persons working in a nuclear reactor is:

- 1 mSv (b) 2 mSv (c) 3 mSv (d) 4 mSv

9. The old and new units of absorbed dose are related by:

- (a) 1 Gy=10 rad (b) 1 Gy=100 rad (c) 1 Gy=1000 rad (d) 1 Gy=10000 rad

MCQ # 1: (b)	MCQ # 2: (c)	MCQ # 3: (b)	MCQ # 4: (d)	MCQ # 5: (a)
MCQ # 6: (d)	MCQ # 7: (a)	MCQ # 8: (a)	MCQ # 9: (b)	

**MCQs Related to the Article "21.13 BIOLOGICAL AND MEDICAL USES OF RADIATION"**

1. The most useful tracer isotope for the treatment of thyroid gland is:

- (a) Cobalt-60 (b) Carbon-14 (c) Iodine-131 (d) Strontium-90

2. Circulation of blood can be studied by:

- (a) Sodium—24 (b) strontium—90 (c) Carbon—14 (d) Iodine—131

properties

3. Strontium -90 is used as \_\_\_\_\_

- (a)  $\beta$  - particle source (b)  $\alpha$  - particle source (c)  $\gamma$  - particle source (d) Neutrons source

4. Radiations are used for the treatment of skin of a patient is \_\_\_\_\_

- (a)  $\alpha$  - rays (b)  $\beta$  - rays (c) X - rays (d)  $\gamma$  - rays

5. The most useful tracer isotope in agriculture is:

- (a) Cobalt 60 (b) Strontium - 90 (c) Carbon 14 (d) Nickel - 63

MCQ # 1: (c)	MCQ # 2: (a)	MCQ # 3: (a)	MCQ # 4: (b)	MCQ # 5: (c)
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**MCQs Related to the Article "21.14 BASIC FORCES OF NATURE"**

1. Dr. Abdus Salam unified electromagnetic force and \_\_\_\_\_

- (a) Weak Nuclear Force (b) Strong Nuclear Force  
(c) Magnetic Force (d) Gravitational Force

2. Strong nuclear force

- (a) Increase with magnitude of increasing charge (b) Decreases with magnitude of increasing charge  
(c) Is independent of charge (d) None

3. Nuclear force exist between

- (a) Proton - proton (b) Proton - Neutron (c) Neutron-Neutron (d) All of the above

MCQ # 1: (a)	MCQ # 2: (c)	MCQ # 3: (d)
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**MCQs Related to the Article "21.15 BUILDING BLOCKS OF MATTER"**

1. Which of the following are elementary particles:

- (a) Protons (b) Neutrons (c) Photons (d) Mesons

2. A particle is made up of two up quarks and one down quark is:

- (a) Proton (b) Neutron (c) Boson (d) Lepton

**3. Types of quarks are:**

- (a) 4 (b) 6 (c) 8 (d) 10

**4. Sub atomic particles are divided into**

- (a) Photon (b) Leptons (c) Hadrons (d) All a, b & c

**5. The building block of protons and neutrons are called**

- (a) Ions (b) Electrons (c) Positrons (d) Quarks

**6. The particles equal in mass or greater than protons are called:**

- (a) Baryons (b) Hadrons (c) Fermions (d) Mesons

**7. Electrons are:**

- (a) Hadrons (b) Leptons (c) Quarks (d) Baryons

**8. Which of the following belong to "hadrons" group:**

- (a) Proton (b) Electron (c) Muons (d) Neutrinos

**9. Two down and one up quark make:**

- (a) Proton (b) High energy photon (c) Positrons (d) Neutron

**10. Which of the following is not hadron:**

- (a) Muons (b) Protons (c) Neutrons (d) Mesons

**11. Hadrons are the particle included**

- (a) Protons (b) Neutrons (c) Mesons (d) All of these

**12. Lepton's particles which experience no strong nuclear force are**

- (a) Electrons (b) Muons (c) Neutrinos (d) All of these

**13. The charges on the quarks are**

- (a) One unit (b) Half unit (c) Fraction (d) None of these

**14. Meson is made from**

- (a) A pair of quarks (b) A pair of anti quarks (c) A pair of quarks and anti quarks

**15. Three up quarks combine to form a new particle, the charge on this particle is:**

- (a) 1 e (b) 2 e (c) 3 e (d) 4 e

MCQ # 1: (c) MCQ # 2: (a) MCQ # 3: (b) MCQ # 4: (d) MCQ # 5: (d) MCQ # 6: (a) MCQ # 7: (b) MCQ # 8: (a)

MCQ # 9: (d) MCQ # 10: (a) MCQ # 11: (d) MCQ # 12: (d) MCQ # 13: (c) MCQ # 14: (c) MCQ # 15: (b)

