MDCAT Physics Chapter 13 Nuclear Physics of Solids Online Test

Sr	Questions	Answers Choice
1	The more readily fissionable isotope of uranium has an atomic mass of:	A. 220 B. 230 C. 235 D. 240
2	The particles equal in mass or greater than mass of protons are called:	A. Leptons B. Mesons C. Baryons D. Quarks
3	A radioactive isotope ☐☐☐ ☐ decays consecutively to ☐☐☐ ☐ the particles emitted are:	A. One ☐ and one ☐ B. Two ☐ and one ☐ C. e ☐ and two ☐ D. Two ☐ and two ☐
4	The mother and daughter elements with the emission of ☐ − ☐☐☐☐, are called:	A. Isotopes B. Isobars C. Isomers D. Isodiapheres
5	The phenomenon of radioactivity is associated with:	A. Fission of nucleus B. Disintegration of neutrons C. Emission of spectral lines D. Spontaneous disintegration of the nuclei of atoms
6	☐, ☐ ☐☐☐ radiations come out of radioactive substance:	A. Spontaneously B. When it is put in a reactor C. When it is heated D. Under pressure
7	During a negative β-decay	A. An atomic electron is ejected B. A neutron in the nucleus decays emitting an electron C. An electron which already present within the nucleus is ejected D. A part of binding energy of nuclei is converted into electron
8	A count rate 240 per minute reduces to 30 counts per min in 1 hour. The half-life of source is:	A. 20min B. 60min C. 80min D. 90min
9	Which row is correct for fission and for fusion?	A. Produces larger nuclei B. Produces larger nuclei C. Produces smaller nuclei D. Produces smaller nuclei
10	For atomic nucleus, the binding energy per nucleon with increase in mass number:	A. Increases continuously B. Remains same C. Decrease continuously D. First increases and then decreases with increase in mass number
11	The activity of a radioactive sample is 1.6 curie and half-life is 2.5 days. Its activity after 10 days will be:	A. 0.8 Curie B. 0.1Curie C. 0.4 Curie D. 0.16 Curie
12	Three quarks make up a:	A. Leptons B. Mesons C. Baryons D. Quark
13	The most penetrating radiations out of the following is that of	A. ☐-rays B. β-rays C. α-particles D. X-rays
14	When the radioactive nucleus emits a beta particle, the proton neutron ration:	A. increases by one B. Remains same C. Decreases by one D.

15	When a radioactive nucleus remits a beta particle, the proton neutron ratio:	A. Decreases B. Increases C. Remain same D. None of the above
16	The example of nuclear fusion is:	A. Formation of barium and krypton from uranium B. Formation of plutonium -235 from uranium -235 C. Formation of helium from hydrogen D. Formation of water from hydrogen and oxygen
17	The fusion of hydrogen into helium is more likely to take place:	A. At high temperature and high pressure B. At high temperature and low pressure C. At low temperature and low pressure D. At low temperature and high pressure
18	In nuclear fission reaction, when the products are 140X and 94Sr, the number of neutrons emitted is	A. 1 B. 2 C. 5 D. 9
19	Due to emission of $\beta+$ − particle:	A. Mass of the nucleus increases B. Mass of the nucleus decreases C. Charge on the nucleus increases D. Charge number decreases
20	A radioactive nucleus can emit:	A. Electron B. β particles C. Positron D. Any of these
21	The half-life of a certain element is 3.5 days at STP. If the temperature is doubled and pressure is reduced to half then half-life of the same element will be:	A. 1.75 days B. 3.5 days C. 7 days D. 14 days
22	In an α −decay:	A. The parent and daughter nuclei have same number of protons B. The daughter nucleus has one proton more than parent nucleus C. The daughter nucleus has two protons less than parent nucleus D. The daughter nucleus has two neutrons more than parent nucleus
23	When a radioactive nucleus emits a β −paritcles, the mass number of the atom:	A. Increases by one B. Decreases by one C. Remains the same D. Decreases by four
24	Beta particles have less ionizing power than that of alpha particles because:	A. Their smaller energy B. Their smaller mass C. Their smaller density D. Their smaller charge
25	The uranium Nucleus $^{238}_{92}U$ undergoes successive decays, emitting respectively α − particle, β − particle and β − particle. What is the atomic number and atomic mass of the resulting nucleus:	A. 90, 238 B. 91, 234 C. 92, 236 D. 92, 238
26	A thorium nucleus is formed when a uranium nucleus emits an α −particles. Atomic number of thorium is :	A. 23 B. 60 C. 90 D. 70
27	The number of electrons in a nucleus X of atomic number Z and mass number A is:	A. A B. W C. Z D. Y
28	The binding energy per nucleon is:	A. Greater for heavy nuclei B. Least for heavy nuclei C. Greatest for light nuclei D. Greatest for medium nuclei
29	Because of large mass when α −paricle enters the atom or molecule it:	A. Moves in zigzag path B. Moves along straight line C. Moves along circular path D. None of these

A. 140days

30	In 420 days, the activity of a sample of polonium (Po) fell to one-eight of its initial value. The half-life of polonium is :	A. 140days B. 45days C. 87days D. 90days
31	The half-life of a radioactive element which has only 1//32 of its original mass left after a lapse of 60 days is:	A. 12days B. 10days C. 22days D. 36days
32	The rate of decay radioactive substance:	A. Is constant B. Decrease exponentially with time C. Varies inversely with time D. Decrease linearly with time
33	During a negative β-decayv	A. An atomic electron is ejected B. A neutron in the nucleus decays emitting an electron C. An electron which already present within the nucleus is ejected D. A part of binding energy of nuclei is converted into electron
34	Which of the following have maximum ionization power?	A. ☐ −rays B. ☐ −rays C. ☐ −rays D. Same for all
35	Half-life of radon gas is:	A. 1620 years B. 3.8 days C. 7 days D. 11 days
36	Beta particles have penetration of about:	A. 100 times more than that of the gamma particles B. 100 times less than that of an alpha ray C. 100 times more than that of an alpha ray D. 10 times more than that of an alpha particle
37	Nuclear fission experiments show that the neutrons the uranium nuclei into two fragment of about the same size. This process is accompanied by the emission of several:	A. Protons and positrons B. ☐ −partilces C. neutrons D. Protons and ☐ −partilces
38	A radioactive substance has a half-life of 4 months. Three-fourths of the substance will decay in:	A. 5months B. 6months C. 8months D. 7months
39	If the radioactive substance reduces to ☐ ☐☐ PHYSICS of its original mass in 40 days then its half-life is:	A. 10days B. 20days C. 40days D. 4days