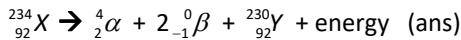


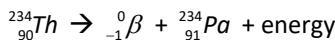
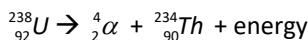
5.1(c) Nuclear reactions

MCQs

1. D $^{230}_{92}Y$



2. C 91



\therefore proton number of protactinium = 91 (ans)

(ans)

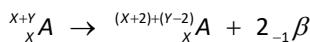
3. C $^{226}_{88}Ra \rightarrow {}^{222}_{86}Rn + {}_2^4He$

(ans)

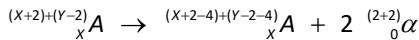
4. D $X - 2$ $Y - 6$

Let the unstable nucleus by A.

During β decay when a beta particle is formed, a neutron changes into a proton and a high-energy electron.



During α decay, an α particle with 2 neutrons and 2 protons is formed.



Hence the number of protons is $X - 2$
and the number of neutrons is $Y - 6$ (ans)

(ans)

Questions – 5.1(c)

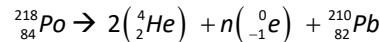
1. (a)

β -particles are deflected to the positive plate, hence charges flow. (ans)

(b)

Change in nucleon number = $218 - 210 = 8$

Assume that $^{218}_{84}Po$ emits 2 α -particles:



$$84 = 4 + (-n) + 82$$

$$n = 2$$

\therefore 2 α -particles and 2 β -particles have been emitted. (ans)

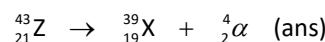
(ans)

2. (a)

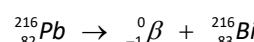
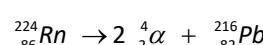
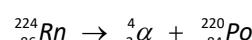
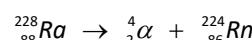
Mass number = 43

Proton number = 21 (ans)

(b)



3. Summarizing the information on the decays of the isotopes,



Isotope	Nucleon number	Proton number	Neutron number
Radium	228	88	140
Radon	224	86	138
Polonium	220	84	136
Lead	216	82	134
Bismuth	216	83	133

(ans)

(ans)