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8 **(a)** State what is meant by the *binding energy* of a nucleus.

.....

.....

..... [2]

(b) Show that the energy equivalence of 1.0 u is 930 MeV.

[3]

(c) Data for the masses of some particles and nuclei are given in Fig. 8.1.

	mass/u
proton	1.0073
neutron	1.0087
deuterium ($^{2}_{1}$H)	2.0141
zirconium ($^{97}_{40}$Zr)	97.0980

Fig. 8.1

Use data from Fig. 8.1 and information from **(b)** to determine, in MeV,

(i) the binding energy of deuterium,

binding energy = ... MeV [2]

(ii) the binding energy **per nucleon** of zirconium.

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binding energy per nucleon = ... MeV [3]