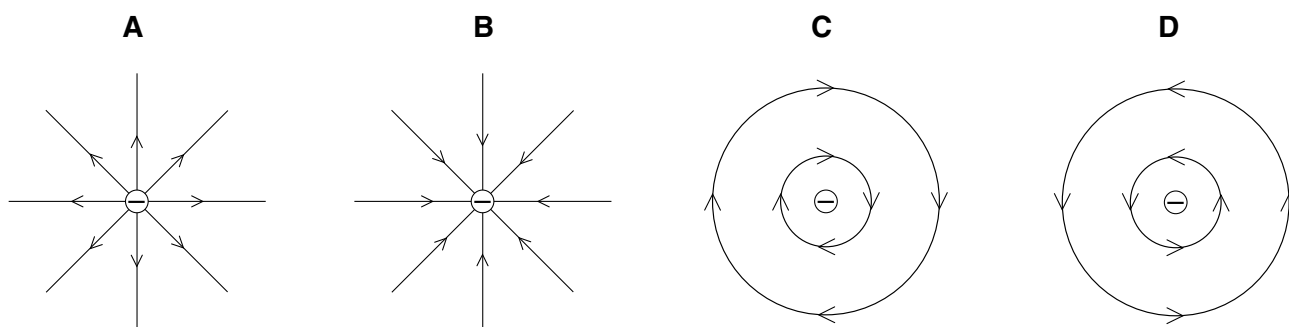


37 Which diagram shows the electric field pattern of an isolated negative point charge?



38 The numbers of protons, neutrons and nucleons in three nuclei are shown.

nucleus	number of protons	number of neutrons	number of nucleons
X	15	16	31
Y	15	17	32
Z	16	16	32

Which nuclei are isotopes of the same element?

- A** X and Y      **B** X and Z      **C** Y and Z      **D** none of them

39 In an experiment to investigate the nature of the atom, a very thin gold film was bombarded with  $\alpha$ -particles.

What pattern of deflection of the  $\alpha$ -particles was observed?

- A** A few  $\alpha$ -particles were deflected through angles greater than a right angle.  
**B** All  $\alpha$ -particles were deflected from their original path.  
**C** Most  $\alpha$ -particles were deflected through angles greater than a right angle.  
**D** No  $\alpha$ -particle was deflected through an angle greater than a right angle.

40 When a nucleus of  $^{238}_{92}\text{U}$  absorbs a slow neutron it subsequently emits two  $\beta$ -particles.

What is the resulting nucleus?