Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

Each answer shows the steps, then the **result**.

2.1

the internet is the global network of networks: the cables, routers and rules that carry data; the Web is one service on the internet: linked pages viewed in a browser

2.2

urban: 30 million $\times 0.18 = 5.4$ million; rural: 20 million $\times 0.59 = 11.8$ million; total offline $=$ **17.2** million; a cause, e.g. fewer masts and cables in rural areas, because they are less profitable for companies / lower incomes / fewer digital skills

2.3

the message is split into small packets, each with the destination address and a number; routers send each packet along a path, which can differ between packets; at the destination the packets are put back in order; advantage, e.g. if one route fails or is busy, packets take another route, so the network is robust

2.4

benefits: access from any device, at home and school; automatic backup protects against lost devices; lower cost of local servers; concerns: privacy: student data held by a company, possibly in another country; dependence on the internet and on one provider; a judgement, e.g. beneficial if the school chooses a provider with strong data protection and keeps control of the data

3.1

Mark with the markbands: [13-15] clearly focused on the question, accurate and relevant knowledge and real-world examples used as evidence, concepts applied, well-developed critical analysis, different perspectives evaluated, a reasoned conclusion; [10-12] focused, mostly accurate knowledge, analysis with some evaluation; [7-9] some focus, relevant knowledge, mostly narrative or description with limited analysis; [4-6] little focus, limited knowledge, mostly narrative; [1-3] little understanding of the question. Points that may be included: definition of the digital divide; a real-world example in detail, e.g. rural broadband programmes, community internet centres, mobile money in East Africa; for: without cables, masts and electricity there is no access; about 2.6 billion people offline in 2023 (ITU); mobile networks transformed access in many low-income countries; against: affordability: devices and data cost too much for many; skills: people need digital literacy to benefit; relevance: content in local languages and useful services; gender and age gaps remain where infrastructure exists; concepts used, e.g. power, space, values and ethics; conclusion: a judgement, e.g. infrastructure is necessary but not sufficient