



PART 3

Read the text below and answer questions 27–40.

CIRCULAR ECONOMY: RETHINKING GROWTH AND WASTE

A

For much of the twentieth century, industrial growth followed a linear sequence: extract resources, manufacture goods, sell them, then discard what remains. The model appears efficient partly because many costs are treated as externalities—damaged ecosystems, polluted air and water, and strategic dependence on finite substrates such as critical minerals. These liabilities sit outside the price tag until they surface as cleanup bills, health burdens, or supply shocks. The circular economy is presented as a systemic response: instead of treating waste as an inevitable end point, it aims to keep materials, components, and products circulating at their highest possible value, so that less new extraction is required and fewer residuals accumulate.

B

Circularity begins upstream, with design decisions that determine what is technically possible at the end of a product's life. A device built from fewer material types, assembled with standard fasteners, and free from permanent adhesives can be opened, repaired, and separated. Modularity allows an outdated component to be replaced without scrapping the whole device; remanufacture becomes feasible when parts can be recovered, inspected, and restored to an “as-new” standard. Design for repair and disassembly is therefore not an aesthetic preference but an engineering logic: it preserves option value. By contrast, sealed or heavily bonded products tend to be shredded into mixed streams, where contamination reduces quality and pushes materials toward low-grade recycling or disposal. In short, design governs whether value is conserved through reuse or dissipated through mixed waste.

C

Because materials degrade and energy is required at every step, circular strategies are often framed as a hierarchy rather than a menu of equal choices. The highest-value actions reduce demand and extend lifetimes: durability, maintenance, sharing underused assets, and direct reuse. Only after these comes recycling, which is often necessary but rarely optimal. Even for metals, where recycling can be efficient if streams are kept clean, collection and reprocessing still consume energy, and losses occur. For many plastics, additives and dyes complicate sorting and can lead to downcycling, where material is converted into lower-performance products that cannot be recycled indefinitely. The



hierarchy matters because a society may celebrate rising recycling rates while overlooking the larger gains available from preventing waste through longer use and repeated repair.

D

Business models are also reshaped by circular thinking. In product-as-a-service arrangements, a firm sells performance—mobility, illumination, cooling—rather than transferring ownership of a unit and disengaging. Retained ownership can align incentives: providers benefit from building durable goods, standardising parts, and retrieving products for refurbishment because their profits depend on long-term performance and repeat use. However, these models rely on reverse logistics: products must be collected, inspected, and routed back into repair or remanufacturing channels. That requires logistics networks, service capacity, clear contracts, and customer trust that maintenance will be timely and affordable. Without these supporting systems, service models can become administrative complexity layered on top of the same disposable hardware.

E

A further distinction in circular design separates biological and technical loops, because the two behave differently and require different controls. Biological materials such as food scraps, paper fibres, and natural textiles can return to the biosphere via composting or anaerobic digestion, but only when contamination is limited. Technical materials—metals, engineered polymers, electronics—should circulate within industrial systems through reuse, repair, remanufacture, and high-quality recycling. When these loops are mixed, both lose value: compost is compromised by plastics, while technical recycling becomes more expensive when biological residues contaminate inputs. The separation of flows is therefore not a moral slogan but a practical requirement to reduce systemic leakage and preserve material quality.

F

Digital tools are often described as enablers of circularity because they can improve visibility and coordination across supply chains. Sensors support predictive maintenance, identifiers such as RFID tags can track components, and digital product passports can record what a product contains so that repairers and recyclers know what they are handling. Yet information alone does not guarantee reuse. If spare parts are unavailable, if products are too cheap to repair, or if warranties and software locks deter independent servicing, then tracking systems merely document disposal rather than preventing it. Digital governance also raises questions about access: if data is controlled by a few large firms, smaller suppliers and repair networks may be excluded from the very information needed to keep products in circulation.



G

Whether circular systems scale depends heavily on policy, infrastructure, and institutional design. Measures such as landfill taxes and extended producer responsibility can shift disposal costs back toward producers, encouraging design changes and better collection. Public procurement can create stable demand for refurbished goods and recycled materials, reducing risk for investors in sorting, repair, and remanufacturing capacity. However, without practical infrastructure—collection points, skilled technicians, reliable sorting, and regional processing facilities—materials leak out of the economy despite good intentions. Circularity also faces a measurement problem: a product may contain recycled content yet be impossible to repair, and a country may appear to reduce domestic waste by exporting scrap, relocating impacts rather than eliminating them. Critics warn of circularity theatre, in which minor packaging adjustments are marketed as transformation while total material use continues to rise. In their view, genuine progress often requires reducing throughput, not simply rearranging waste streams. Even so, many firms treat circularity as a resilience strategy: when supply chains fracture or commodity prices spike, those able to recover components, substitute materials, and extend product life are less exposed. In this sense, the circular economy is an industrial redesign that links engineering, finance, consumer behaviour, and regulation to keep value circulating within environmental limits.

Questions 27–32

Choose the correct heading for each paragraph.

List of Headings

- i A hierarchy in which recycling is not the first priority
- ii Tracking materials with digital systems—and why this may not be enough
- iii Selling a service instead of a product, and the need to take items back
- iv Two material cycles and the consequences of contamination
- v Why the linear model creates hidden costs, and the basic circular idea
- vi Designing products for repair, disassembly, and remanufacture
- vii Measuring circularity and the risk of misleading claims
- viii Consumer education as the only requirement for circular success

27 Paragraph A

28 Paragraph B

29 Paragraph C

30 Paragraph D



31 Paragraph E

32 Paragraph F

Questions 33–36

Choose **TRUE** if the statement agrees with the information given in the text, choose **FALSE** if the statement contradicts the information, or choose **NOT GIVEN** if there is no information on this.

33 The circular economy is presented as a response to costs that the linear system does not include in market prices.

34 The passage suggests that recycling is usually the most effective circular strategy.

35 Digital product passports automatically create reuse across industries.

36 The passage provides specific statistics on the percentage of national waste that is exported to other countries.

Questions 37–40

Complete the summary below. Choose **ONE WORD ONLY** from the text for each answer.

How circular systems retain value

The circular economy keeps products and materials in use for longer, reducing

37 from finite sources. Upstream design should allow a product to be taken apart, a process known as **38** Service-based models depend on taking products back; before inspection and routing, items must first be **39** Critics argue that genuine progress may require lowering overall **40** rather than merely rearranging waste streams.

Answer Key

27. v

28. vi

29. i

30. iii

31. iv

32. ii

33. TRUE



34. FALSE

35. FALSE

36. NOT GIVEN

37. extraction

38. disassembly

39. collected

40. throughput