



CFA UK LEVEL 4 CERTIFICATE IN CLIMATE & INVESTING

SPECIMEN PAPER

Version 1: Tested from 01 April 2022

Key Information	
Number of questions	100. 1 mark per question.
Time allowed	2 hours 20 minutes
Target pass mark	The pass mark of the exam seldom varies between 65% and 75%.
Types of questions used	<ul style="list-style-type: none">• Standard multiple choice – candidates select 1 option of 4.• Multiple response multiple choice – candidates select all answers that apply These questions will clearly state ‘Select all that apply’.• Gap fill – candidates must enter a specific response.• Drag and drop – candidates must drag and drop the selected response into the correct field.• Short item set – candidates are given a short scenario with 3 questions associated with it. The material in the case study does not change with the questions• Long item set – candidates are given a long scenario with 5 questions associated with it. The material in the case study does not change with the questions.
<p>The specimen paper should NOT be viewed as a primary source of learning. By its nature, a specimen paper will only cover proportion of the learning outcomes. Candidates are strongly advised to develop a fundamental understanding of the curriculum in order to demonstrate the competence required to pass the examination.</p> <p>Please click here for all Terms and Conditions pertaining to the CFA UK Level 4 Certificate in Climate and Investing.</p>	

SPECIMEN PAPER: QUESTIONS

1. Which type of climate feedback and natural hazard are **most** likely if sea ice melts because of global warming?
 - A. A negative climate feedback due to changes in reflectivity of the sea and a chronic hazard from sea level change.
 - B. A positive climate feedback due to changes in reflectivity of the sea and a chronic hazard from sea level change.
 - C. A negative climate feedback due to changes in reflectivity of the sea and an acute hazard from sea level change.
 - D. A positive climate feedback due to changes in reflectivity of the sea and an acute hazard from sea level change.

2. A politician gives a speech which includes the following statements about the impact of climate change as it relates to the following social factors:

Urban living: The urban heat island effect will improve the health outcomes of city dwellers relative to rural dwellers during summer periods of elevated temperature.

Migration: Long term migration between countries due to climate change is likely to become the adaptation of first resort for adversely affected populations.

Health: Climate change is projected to increase incidences of both cold and heat related mortality during winter and summer, respectively.

Food security: Higher atmospheric carbon dioxide concentrations will increase the efficiency of photosynthesis of some crops which will increase their productivity.

Which social factor arising from climate change is **correctly** described?

- A. Urban living.
 - B. Migration.
 - C. Health.
 - D. Food Security.
3. Which of these greenhouse gases has the **lowest** global warming potential (GWP)?
 - A. N₂O.
 - B. CH₄.
 - C. CO₂.
 - D. HFC-23.

4. Why does the use of a blind pool fund make climate-related risk assessment more difficult for a private equity fund investor?
- A. The risk that the climate policies of the General Partners are not known.
 - B. The climate risks of the underlying assets are not known.
 - C. The amount of investment exposure to climate risks is unlimited.
 - D. The risk that investments will be in sectors more exposed to climate change.
5. The Chief Financial Officer of a global food company is reviewing an internal strategic management accounting report. The report uses cost and risk assumptions based on climate model simulations following Representative Concentration Pathway (RCP) 2.6. The Chief Financial Officer adds the following notes to the report to explain the use of RCP2.6.

Which note is **correct**?

- A. RCP2.6 models the highest emissions RCP scenario.
 - B. Each RCP reflects a possible set of societal choices.
 - C. The RCP pathways model climate to the year 2050.
 - D. RCP2.6 uses radiative forcing of 2.6 watts per metre².
6. Are the following statements about the World Green Building Council's Whole Life Carbon Vision **True** or **False**?

#1 Renovated buildings should have at least 25% less embodied carbon by 2030.

#2 New buildings should have at least 30% less embodied carbon by 2030.

#3 All buildings with direct control should operate at net zero carbon by 2030.

7. Which of the following types of model would consider interconnections between physical climate impacts, economic systems and technological systems when assessing systemic climate risks?
- A. Circular economy models.
 - B. Economic input-output models.
 - C. Integrated assessment models.
 - D. Socio-economic representative pathways.

8. A press release issued by a multinational climate change body includes data which shows two outcomes:

Outcome 1: Temperature return periods are reducing; and

Outcome 2: The amount of moisture in the atmosphere is increasing.

Which of the following describes how tropical storms are affected by each outcome?

- A. **Outcome 1** **Outcome 2**
Tropical storms will be less frequent. Tropical storms will be stronger.
- B. **Outcome 1** **Outcome 2**
Tropical storms will be weaker. Tropical storms will be more frequent.
- C. **Outcome 1** **Outcome 2**
Tropical storms will be weaker. Tropical storms will be less frequent.
- D. **Outcome 1** **Outcome 2**
Tropical storms will be more frequent. Tropical storms will be stronger.
9. Which of the following would **not** be considered a principle for asset owners and asset managers under the UK Stewardship Code?
- A. Signatories support stewardship through governance, resources and incentives.
 - B. Signatories report quarterly on their engagement with issuers.
 - C. Signatories monitor and hold managers and/or service providers to account.
 - D. Signatories engage with issuers to maintain or enhance the value of assets.
10. Helene is an analyst working for a climate investment fund and is evaluating how a German petrochemicals company might be affected by the transition to a low-carbon economy.

What step(s) should Helene undertake as she prepares an engagement strategy?

(Select all that apply)

- A. Decide whether to focus on climate risk or supply chain risk.
- B. Develop milestones for her engagement.
- C. Establish clear escalation measures.
- D. Define the scope of the engagement.

11. Daniel is a governance analyst and is concerned that an oil company's lobbying efforts are misaligned with the goals of the Paris Agreement.

Which of the following is **not** an engagement action Daniel should consider?

- A. Incorporate climate lobbying alignment questions and benchmarking metrics.
- B. Propose a shareholder resolution demanding lobbying disclosures.
- C. Propose a shareholder resolution to prevent the Chairman and Chief Executive Officer from lobbying.
- D. Request a board-level engagement on corporate climate lobbying alignment and request meetings.

12. Which of the following is **not** an investor coalition to tackle climate policy?

- A. The Investor Agenda.
- B. Investor Stewardship Group.
- C. Global Investor Coalition on Climate Change.
- D. Institutional Investors Group on Climate Change.

13. Which of these actions is an example of climate change mitigation?

- A. Planting drought resistant varieties of food crops.
- B. Writing a business disaster recovery plan.
- C. Building flood barriers along a city river.
- D. Installing low energy light bulbs

14. Which of the following investment approaches would be **least** suited to an investor seeking to achieve a positive impact on the climate?

- A. Purchase of green bonds issued by a utility.
- B. Board level engagement to improve climate targets.
- C. Investment as part of consortium in wind project.
- D. Negative screening of portfolio for energy companies.

15. Which of the following would **typically** be seen as investor impact in large liquid public markets?

(Select all that apply)

- A. Grow undersupplied capital markets.
- B. Provide flexible capital.
- C. Shareholder engagement.
- D. Collaborative policy advocacy.

16. The issuer of a green bond associated with a building want to make it eligible for certification under the Climate Bonds Standard through an absolute performance improvement pathway. How should the issuer aim to achieve its net zero emissions target?
- A. A nonlinear trajectory and aim for net zero by 2030.
 - B. A nonlinear trajectory and aim for net zero by 2050.
 - C. A linear trajectory and aim for net zero by 2030.
 - D. A linear trajectory and aim for net zero by 2050.
17. Anna is an analyst for an energy fund, focused on utilities and oil and gas exploration companies. Jans, the portfolio manager of the fund, has asked Anna to assess the best index construction to reduce carbon emissions across the portfolio, whilst minimising tracking error.
- Anna should recommend an index design that
- A. Excludes controversial activities and fossil fuels.
 - B. Selects the highest ESG performers in each sector.
 - C. Reweights companies based on their carbon intensity.
 - D. Excludes companies with a carbon intensity over a specified limit

Several questions are associated with the following case study. The material given in the case study will not change.

A portfolio manager's portfolio is invested in in three companies, X, Y and Z. He has gathered the following information:

		Company X	Company Y	Company Z
Investment value in portfolio	£million	15	13	16
Revenue	£million	12	6	12
Market Capitalisation	£million	150	260	160
Annual GHG emissions	tCO ₂ e	2,800	3,400	3,900
Cost of purchasing green power	£	260,000	320,000	200,000
Cost of offsetting carbon emissions	£	150,000	210,000	180,000
Cost of complying with climate-related disclosure regulations	£	110,000	130,000	150,000

18. Calculate an internal carbon price for Company Y to the nearest 2 decimal places (£/tCO₂e).

_____ .

19. Calculate the portfolio's carbon intensity to the nearest 2 decimal places (tCO₂e/million revenue):

Note on rounding: When undertaking the calculation, please round numbers to the nearest 2 decimal places. Please round percentages to the nearest 2 decimal places (e.g. 10.25%) or the 4th decimal place if expressed as a number (e.g. 0.1025)

_____ .

20. Calculate the highest company carbon intensity to the nearest 2 decimal places (tCO₂e /£million revenue for company).

_____ .

21. How could an index achieve a primary goal of integrating a broad set of ESG issues?

- A. Exclusion of securities associated with high climate risks and high social risks.
- B. Re-weighting companies within a broad and diversified opportunity set.
- C. Re-weighting securities based on EU Taxonomy alignment.
- D. Exclusion of lowest rated performers in each sector.

22. Camille is a fixed income portfolio manager for Walte Ltd. and is undertaking a climate-related sensitivity analysis of her portfolio.

Which of the following should she consider in her analysis?

(Select all that apply)

- A. Average yield.
- B. The tenor of debt.
- C. Impact of fiscal policy.
- D. Potential impact on the issuers' creditworthiness.

23. Which of the following is **not** a minimum ESG disclosure requirement for EU Climate Transition Benchmark and Paris-aligned Benchmark?

- A. Disclosure templates.
- B. Geographical exposure.
- C. Key performance indicators.
- D. Climate scenario alignment.

24. A portfolio manager is considering additions to a fund portfolio, which employs tilting.

Investment grade is an eligibility requirement.

Company	Industry	Carbon Intensity	Carbon Targets	Weighted Climate Score	Credit Quality	Alpha Score	Weighted Market Cap
EE	Utilities (heating)	0.1234	4	1.50	IG	4	2.50%
FF	Transport (air)	0.5925	1	-1.50	IG	4	4.50%
GG	Waste (recycling)	0.0189	5	1.25	Sub-IG	5	3.50%
HH	Transport (bus)	0.1089	3	1.00	IG	2	5.50%

Notes to the table

- Carbon Intensity, measured by Scope 1 and 2 CO₂ tonnes/\$mm revenues;
- Carbon Targets, comparing the most ambitious (highest, 5) to least ambitious (lowest, 0);
- Weighted Climate Score, which is a proprietary score incorporating carbon intensity, carbon targets and social and governance factors, with the best scoring at 1.5 and worst scoring at -1.5.
- Credit Quality, which is either investment grade (IG) or sub investment grade (Sub-IG).
- Alpha Score, which details anticipated returns versus the market on a 6 month view, with the highest yielding scoring at 5 and worst scoring at 0.
- Weighted Market Cap, which measures the holdings' market capital weighting in the index.

Given the information summarised in the table above, which potential company investment would be expected to contribute **most** alpha on a 6 month time horizon?

- A. Company HH.
- B. Company FF.
- C. Company GG.
- D. Company EE.

25. Assume that global warming is to be limited to 1.5°C above pre-industrial temperatures.

Which **best** describes the remaining global carbon budget?

- A. The amount of CO₂ above pre-industrial annual emissions which can still be emitted each year before warming reaches 1.5°C.
- B. The total amount of CO₂ which can still be emitted each year before warming reaches 1.5°C.
- C. The cumulative total amount of CO₂ since pre-industrial levels which can be emitted before warming reaches 1.5°C.
- D. The cumulative amount of CO₂ which can still be emitted before warming reaches 1.5°C

26. Which of the following **best** describes Representative Concentration Pathways (RCPs)?

- A. Pathways of decreasing well mixed GHG concentrations as countries target net zero emissions.
- B. Possible historical pathways of anthropogenically caused changes of GHG concentrations.
- C. Pathways of well mixed GHG concentrations associated with different socioeconomic scenarios.
- D. Different GHG concentration pathways which can stay within the Paris 1.5°C carbon budget.

27. Which of the following are the three core themes which the CDP uses as the basis of its global disclosure system?

- A. Land use, Water, Atmosphere.
- B. Climate, Biodiversity, Natural resources.
- C. Climate, Forests, Water.
- D. Land use, Climate, Natural resources.

28. Which of these statements is **correct** regarding the use of a carbon tax?
- A. A carbon tax applies a price per unit of carbon consumed.
 - B. A carbon tax applies a cap on the maximum emissions.
 - C. A carbon tax will progressively decrease until it reaches zero.
 - D. A carbon tax gives some certainty about the cost of GHG emissions.
29. The management of which form of environmental damage is covered by the Best Available Techniques (BAT) Reference Document for Large Combustion Plants (LCP) under the EU Industrial Emissions Directive?
- A. GHG emissions.
 - B. Air pollution.
 - C. Heat emissions.
 - D. Water pollution.
30. What three categories are identified by the International Energy Agency (IEA) as being required so as to reduce emissions to align with the Sustainable Development Scenario?
- A. Energy consumption reduction; Renewables; and Land use.
 - B. Energy consumption reduction; Renewables; and Energy efficiency.
 - C. Energy efficiency; Renewables; and Carbon capture, utilisation and storage (CCUS).
 - D. Energy efficiency; Fossil fuel disincentives; and Carbon capture, utilisation and storage (CCUS).
31. Which of the following would **most** likely make newly developed carbon abatement technologies economically viable?
- A. A carbon border adjustment mechanism.
 - B. A decrease in carbon leakage.
 - C. A cap on the price of carbon.
 - D. An increased carbon price.

32. Which of the following cases would be considered by the World Bank's resilience rating system as either:

1. resilience **of** the project; or
2. resilience **through** the project

Drag and drop each case in into the relevant column.

	Resilience of the project	Resilience through the project
Case 1: Developers identify the project location as being vulnerable to extreme precipitation and incorporate improved drainage into road design and take measures to stabilise slopes.		
Case 2: Developers of a manufacturing plant identify the project location as being vulnerable to drought. They incorporate grey water recycling facilities.		
Case 3: Developers integrate disaster risk management criteria into codes and zoning laws to ensure new roads are not built in a flood plain.		

33. An investment manager uses an integrated assessment model (IAM) for scenario analysis across financial markets.

The IAM will provide an instrumental basis for a:

- A. Single carbon budget and a single return forecast.
- B. Single carbon budget but will have a range of return forecasts.
- C. Range of carbon budgets but will have a single return forecast.
- D. Range of carbon budgets and a range of return forecasts.

34. Which of the following assumptions would make it **likely to underestimate** the relationship between physical climate change and regional Gross Domestic Product (GDP)?
- A. Tipping points will occur at different times.
 - B. Positive and negative feedback effects will occur.
 - C. Current price relationships will last over time.
 - D. Positive feedbacks are greater than negative feedbacks.
35. Why can the ex-ante determination of the accuracy of Transition Climate value at risk (CVaR) not be determined?
- A. It is a qualitative measure.
 - B. It is backward looking.
 - C. It is forward looking.
 - D. It is a measure of externalities.
36. Which factors are predetermined under a cap-and-trade emissions trading system?
- A. Maximum allowable carbon emissions and maximum carbon price.
 - B. Maximum carbon price, but not maximum allowable carbon emissions.
 - C. Maximum allowable carbon emissions, but not maximum carbon price.
 - D. Neither maximum allowable carbon emissions nor maximum carbon price
37. A financial analyst at a central bank is stress testing a bank portfolio using Network for Greening the Financial System (NGFS) climate scenarios.
- How should they identify a change to climate regulation which results in an increase in refinancing risk?
- A. A physical risk which results in a credit risk.
 - B. A transition risk which results in a credit risk.
 - C. A physical risk which results in a liquidity risk.
 - D. A transition risk which results in a liquidity risk.
38. Which of the following would represent a lifetime emissions measure by a car manufacturing company?
- A. Total reporting period scope 2 emissions.
 - B. Use-phase emissions of cars produced during reporting period.
 - C. Total reporting period scope 3 emissions.
 - D. GHG emissions of cars used by employees during reporting period.

39. An investment analyst has been asked to prepare a report for a foundation which funds the activities of a charity. The charity helps community groups set up low carbon electricity generation smart networks in line with net zero targets declared by local councils. The foundation trustees ask the analyst the following two questions:

Question 1: We note that the foundation fund has excluded all fossil fuel company investments, even those which offer strong returns over the fund's investment horizon. Why is this?

Question 2: Does the investment time horizon of the fund mean that both physical and transitional climate risks will be significant considerations when selecting investments?

The analyst replies to each question.

State below whether the answers given by the analyst are **True** or **False**.

Answer to question 1: All endowment funds must make investments which align with the primary values of the charity it was set up to fund. _____

Answer to question 2: Yes, the foundation fund's long-term investment horizon means that both physical and transitional climate risks will be significant considerations.

Several questions are associated with the following case study. The material given in the case study will not change.

Jade Capital Solutions Ltd is setting up a green climate fund focused on climate solutions that meet the requirements of the EU Taxonomy as of 2021. The eligibility threshold is set at 75% alignment.

Amelie, an equity analyst, and Barry, a fixed income analyst, have collected the following information about equities and bonds under consideration for inclusion as investments in the fund:

Issuer	Security type	Issuer revenue mix	GHG emissions over- or undershoot (%)	Potential size of investment (EUR m)
Chartreuse Power Utility	Equity	60% hydropower 40% natural gas	+15%	20
Emerald & Sage Group	Equity	50% EV charging equipment leasing 30% bicycle rentals 20% courier services	-25%	15
Juniper REIT	Green bond	75% LEED Gold or Platinum offices 25% non-certified office buildings	+10%	25
Lime Public Services	Municipal bond	70% recycling plant 30% waste collection and landfill	+10%	15
Olive Industrial Systems	Corporate bond	40% water recycling systems 35% industrial scale electrolyzers 25% nuclear mini reactors	+15%	25

40. The analysts calculate a rough estimate of the portfolio temperature alignment (PTA) using company level over/undershoot data and a 2°C temperature target, applied to a portfolio comprising all five securities and assuming they allocate the full potential investment size as indicated above.

What portfolio level PTA do they calculate?

- A. 2.10°C
- B. 2.14°C
- C. 2.30°C
- D. 2.50°C

41. To assess if any of the securities meet the requirements of the fund, Amelie and Barry have:

- Confirmed that all issuers meet the minimum safeguards under the EU Taxonomy;
- Not identified any material concerns around do-no-significant-harm criteria;
- Checked the technical requirements for relevant sectors and are satisfied that any relevant thresholds are met.

Based on their research, how much should they recommend is **allocated to investments** in the new green climate fund, assuming the investment size indicated in the analysts' summary table?

- A. EUR 55 million.
- B. EUR 65 million.
- C. EUR 75 million.
- D. EUR 85 million.

42. All three bonds are labelled green and the issuers have obtained second party opinions (SPOs) that confirm that they satisfy the ICMA Green Bond Principles. The use of proceeds are allocated exactly in line with the issuers' revenue mix.

The portfolio manager suggests that the fund should invest EUR 15m in a sustainability-linked bond that is 75% aligned and EUR 20m in a new SDG bond that will be 85% aligned.

What would be the **weighted average alignment of the bond sub-portfolio** if the bonds selected by Barry and the two bonds suggested by the portfolio manager are included?

- A. 75.25%
- B. 77.35%
- C. 84.71%
- D. 87.00%

43. To identify the best opportunity, Amelie suggests constructing a simple climate score, whereby:

- Full alignment to the EU Taxonomy is scored as 2, partial alignment is scored as 1 and no alignment is 0.
- Issuers are ranked by their PTA, with the best scored 2, the worst 0, and all other 1.
- The alignment and PTA scores are added to arrive at an issuer score.

Which of the following statements is **correct**?

- A. The best score achieved by an issuer is 4, the worst is 1.
- B. Olive Industrial Systems has a higher score than Chartreuse Power Utility.
- C. Lime Public Services has a higher score than Chartreuse Power Utility.
- D. Juniper REIT and Olive Industrial Systems have the same score.

44. Barry reads that Lime Public Services will assume responsibility for the conservation and management of a protected river delta wetland park. The company's revenues will increase by 10% as a result.

Fill in the blanks in the statement below to make it **correct**.

Barry expects that this new division could (1) _____ the level of alignment and this will (2) _____ his inclusion/exclusion decision for the municipal bond.

Please use the list of options for blank (1) and blank (2), respectively.

- (1) increase / decrease / not change
- (2) change / not change

45. Bright Airways Inc. is about to undertake a retrofit of its airplane fleet to operate with biofuel. The treasurer is keen to take advantage of demand for labelled bonds.

Which of the following would be the **most** appropriate?

- A. Green label.
- B. Resilience label.
- C. Transition label.
- D. Ecolabel.

46. Manuel is an analyst for an equity fund. The firm is coming under increased client scrutiny on climate change impacts on the portfolio.

Consequently, he has been asked to evaluate the potential impact of corporate climate policies and actions across their oil and gas holdings, utilising the Climate Action 100+ Disclosure Assessment Indicators of strategic positioning on climate risk, as assessed by the Transition Pathway Initiative (TPI).

Which of the following indicators are relevant in his cash flow forecasts?

(Select all that apply)

- A. Short term GHG targets.
- B. Net zero target.
- C. Capital allocation alignment.
- D. Decarbonisation strategy.

47. David works as an analyst for an integrated oil and gas company, based in the Gulf of Mexico. He has been asked to consider the likely impact across the business from climate change and investment for adaptation and mitigation.

Which of the following is **least** likely to be in his conclusion?

- A. Higher refining margins.
- B. Higher business interruption insurance premiums.
- C. Lower net income from exploration and production.
- D. Lower net asset values.

48. Which of the following is **not** a requirement of the Sustainable Accounting Standards Board (SASB) under their oil and gas standard?

- A. Disclosure of GHG emissions.
- B. Requirement to audit data points.
- C. Sensitivity of hydrocarbon reserves to future carbon price scenarios.
- D. Discussion of the potential impact of climate regulation on capital expenditure strategy.

49. A portfolio manager is considering divestments from his portfolio. She has asked Charlie, an equity analyst, to value oil and gas stocks in various geographies, incorporating climate change considerations.

Which of the following areas would be the **least** relevant when undertaking additional analysis for these valuations?

- A. Costs.
- B. Cost of capital.
- C. Revenues.
- D. Debt profile.

50. Which of the following are considered to be barriers to engagement on decarbonisation strategies for fixed income investors?

(Select all that apply)

- A. Access to the Chief Financial Officer /Treasurer.
- B. Access to the Board and Chief Executive Officer.
- C. Limited influence beyond primary issuance.
- D. Undisclosed representation across the capital structure.

- 51 Which feature would **not** typically be associated with a listed sustainability-linked bond?

- A. Direct financing of green assets.
- B. Link to overall sustainability of the company.
- C. Coupon linked to future Key Performance Indicators (KPIs).
- D. Public access to bond documentation.

52. Which of the following would an investor be expected to scrutinise when assessing a transition bond?

(Select all that apply)

- A. Compliance with a green taxonomy.
- B. The efficacy of the proposed projects.
- C. The use of offsets or unproven technologies.
- D. The robustness of the chosen pathway in relation to a 1.5°C objective.

53. Diego works in the treasury department of Landon Water. The utility is looking to issue a green bond, which will fund some 850 projects, including innovative water abstraction projects, progressive water recycling and drought and flood resilience schemes.

Which indicator would be **least** relevant for the bond-level Impact Reporting?

- A. Annual amount of residential area protected.
- B. Annual amount of wastewater treated, reused or avoided.
- C. Annual change in water utility rates before and after the projects.
- D. Annual water quality control incidents before and after the projects.

54. Which of the following are core transparency recommendations of the Green Loan Principles?

(Select all that apply)

- A. Level of risk.
- B. Management of proceeds.
- C. Process of project evaluation and selection.
- D. Management and safe keeping of loan collateral.

55. A South American government has announced an aggressive transition to renewables as they commit to a 1.5°C target. The country's economy is highly reliant on oil exports.

With reference to fixed income valuations, which of the following is **least** likely?

- A. Higher interest rates.
- B. Higher sovereign credit spread.
- C. Increased credit spread for utilities.
- D. Increased credit spread for domestic banks.

56. Which of the following industries would **more** likely come under downward credit rating pressure from exposure to increasing environmental impacts?

(Select all that apply)

- A. Oil refining and marketing.
- B. Commodity processing.
- C. Global Real Estate Investment Trusts (REITs).
- D. Auto manufacturing.

57. What do the planetary boundaries represent?
- A. The limits in Earth's ability to self-regulate.
 - B. The self-regulation limits of Earth's atmosphere.
 - C. The GHG emissions limit for each country and Earth overall.
 - D. The safe concentration limits of each GHG in the Earth's atmosphere.
58. How frequently **must** Nationally Determined Contributions (NDCs) be submitted to the United Nations Framework Convention on Climate Change (UNFCCC) secretariat?
- A. Every year.
 - B. Every three years.
 - C. Every five years.
 - D. Every ten years.
59. Which of the following is **correct** regarding the Global Reporting Initiative (GRI) reporting standards?
- (Select all that apply)
- A. It is a sustainability standard.
 - B. It features anti-corruption metrics.
 - C. It applies solely to listed companies.
 - D. It features avoided emissions metrics.
60. What GHG emissions disclosures are recommended by the Task Force on Climate-related Financial Disclosures (TCFD)?
- A. Scope 1 is recommended and Scopes 2 and 3 when applicable.
 - B. Scopes 1 and 2 are recommended and Scope 3 when applicable.
 - C. Scopes 1, 2 and 3 are recommended.
 - D. Scopes 1, 2 or 3 when applicable.
61. Which of the following are characteristics of private debt capital investment which increase the opportunities for climate action engagement relative to those arising from private equity capital investment:
- (Select all that apply)
- A. Regular financing.
 - B. Non-financial reporting.
 - C. Extended investment term.
 - D. Maintenance covenants.

62. A portfolio manager includes the following statement in their annual report, regarding portfolio GHG emissions as reported under the Task Force on Climate-related Financial Disclosures (TCFD) guidelines:

The portfolio is fully invested in a specific sector. In the past year portfolios in this sector reported an average carbon intensity of 84 tonnes CO₂e / \$M revenue. Our portfolio had an average carbon intensity of 73 tonnes CO₂e / client, which is lower than the sector average.

Is the portfolio manager's statement **correct**?

- A. The statement is incorrect, because the disclosure is not comparable with other portfolios within the sector.
 - B. The statement is correct, because average carbon intensity has been reported in tonnes CO₂e / \$M revenue.
 - C. The statement is correct, because the statement compares the disclosed metric to other portfolios within the sector.
 - D. The statement is incorrect, because the portfolio manager should have used weighted average carbon intensity for a sector comparison.
63. What is the **main** objective of the Sustainable Stock Exchange Initiative (SSE)?
- A. Mandatory reporting of scope 1 and 2 GHG emissions of stock exchanges.
 - B. Mandatory enhanced levels of annual ESG reporting by all listed companies.
 - C. Voluntary scope 1, 2 and 3 GHG emission reporting by members of stock exchanges.
 - D. Voluntary public commitment to promote improved ESG disclosure of listed companies.

64. Which of the following **best** describes the movement of the demand curve for a fossil fuel during the transition from business as usual to a climate transition scenario and the impact this will have on the fossil fuel's demand and price?

The demand curve will move (1) _____, price will (2) _____ and demand will (2) _____.

Please select from the following options:

- (1) **left / right**
- (2) **rise / fall**

65. Which of the following groups is **most** likely to lead the annual management assessment meeting for a green themed mutual fund with both retail and institutional investors?
- A. Retail investors.
 - B. Institutional investors.
 - C. Investment consultants.
 - D. Independent financial advisors.

Several questions are associated with the following case study. The material given in the case study will not change.

Huang, a portfolio manager for a US\$1 billion globally diversified infrastructure fund, is evaluating two assets for potential inclusion. The fund has committed to being net zero in 25 years and has set a Weighted Average Carbon Intensity (WACI) target of 100 tonnes of CO₂e per \$ revenue in the first year. Huang wants to exercise strong governance over the mitigation plans of the assets in the fund, so is seeking a minimum holding of a third of the project value for each asset included.

Asset 1: Desalination plant in south-east Australia. There is a minimum threshold of energy that will always be required to create fresh water. At present, the energy used by the desalination process is the main source of GHG emissions as the grid has a high carbon intensity. The plant is 10 years old and can be upgraded to be more energy-efficient using co-generation. To further reduce GHG emissions, the plant plans to install renewable energy sources to reduce or replace reliance on grid electricity over the next 15 years.

Asset 2: New terminal for a container port in Quebec, Canada. The port authority is certified under the Green Marine programme and, specifically, has GHG emission targets as one of the 14 performance indicators. The port authority's climate change plan is complex and includes switching energy sources for the port's needs, working with the shipping companies on issues like clean maritime fuel use and changing the ships' behaviour in the harbour and at the port, and creating a circular economy with local industry. *(For the purposes of this exercise, do not consider emissions during the construction phase.)*

Key Information	Asset 1: Desalination plant in south-east Australia	Asset 2: New terminal for a container port in Quebec, Canada
Project value (millions of \$)	500	2,000
Carbon intensity (tonnes of CO ₂ e/revenue)	140	80

66. What information would be **most** helpful in assessing the mitigation plans to ensure the carbon intensity of the assets can improve towards net zero?

- A. The historical emissions of the assets.
- B. The financial impacts from the mitigation activities.
- C. A report of all scope 1, 2 and 3 GHG sources for both assets.
- D. The type of offsets being considered for the desalination plant.

67. Which investment decision would **best** align with the fund's objectives?

- A. Invest \$500m in each asset.
- B. Invest \$300m in Asset 1 and \$700m in Asset 2.
- C. Invest \$150m in Asset 1 and \$850m in Asset 2.
- D. Invest \$1000m in Asset 2.

68. What information would be **most** helpful to Huang in assessing the physical climate risk to each asset?

- A. A resilience plan from each asset detailing redundancies and recovery plans.
- B. Local policies on building codes and catastrophe insurance to assess the resilience of the region.
- C. An engineering analysis identifying relevant physical risks and mapping their impact on each asset.
- D. Scenario assessment of the region with specific focus on water-related risks, e.g., sea level rise, drought, precipitation.

69. Which of the following actions by a fund manager would **most** closely relate to the Principles for Responsible Investment (PRI) "Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices"?

- A. Reporting of climate and ESG policies of investments.
- B. Assessment of embedded climate and ESG risks.
- C. Screening based on climate and ESG factors.
- D. Disclosure of climate and ESG stewardship activity.

70. A company has only one small green project and believes it is not enough to issue a use-of-proceeds instrument.

How does that affect its ability to issue sustainability linked debt, i.e. sustainability linked bonds (SLBs) and/or sustainability linked loans (SLLs)?

- A. The company may still be able to issue SLLs but not SLBs.
- B. The company may still be able to issue either SLLs or SLBs.
- C. The company may still be able to issue SLBs but not SLLs.
- D. The company will not be able to issue either SLLs or SLBs.

71. Which of the following is **correct** regarding the use of notional carbon tax rates in Carbon value at risk (Carbon VaR) models?

- A. Notional carbon taxes are not available from national government sources.
- B. Carbon VaR models externalise notional carbon tax costs if polluter pays principles are applied.
- C. Centrally agreed global taxonomies will determine science based notional carbon tax rates.
- D. Notional carbon taxes can disconnect from their implied role in climate economy models.

72. Drag and drop, into the right-hand column, the sources of carbon emissions that are Scope 3 for a real estate investment:

Scope 3 emissions for a real estate investment

Refurbishment of assets

Energy for operational use procured by the landlord

Building construction

Energy for operational use procured by the tenant

73. Samantha is a portfolio manager working on a new environmental impact fund. The central theme of the fund is to align with the EU Taxonomy.

Which of the following objectives would be **least** relevant when constructing the fund?

- A. Pollution prevention and control.
- B. The introduction of a carbon tax.
- C. The transition to a circular economy.
- D. The protection and restoration of biodiversity.

74. Sarah is an asset manager of an energy-focused equity fund. She is currently assessing RDX Oil Inc, an Exploration & Production (E&P) and utility company for engagement.

Data is presented below.

	Capacity (MW)	Output (MWh)	Revenues \$mm
Thermal coal	2,400	12,614	110
Natural gas	4,500	23,652	260
Nuclear power	6,100	50,674	650
Conventional oil	1,000	4,950	95
Solar energy	750	2,628	90

What percentage of RDX Oil's Power Generation installed capacity is carbon intensive?

- A. 23%
 - B. 47%
 - C. 54%
 - D. 95%
75. Which of the following is **not** a Climate Bond Initiative principle for financing credible transitions?
- A. Pathway must be defined by science based targets.
 - B. Pathway must only include additional carbon offsets.
 - C. Pathway must be aligned with net zero carbon by 2050.
 - D. Pathway must include an assessment of current and future technologies.
76. Do the following statements accurately describe changes to EU carbon pricing regulations, as proposed in the Fit-for-55 policy package released in July 2021?

True / False

#1 - Free emission allowances were allocated to aviation and shipping companies.

#2 - Enhanced focus on imports to deter carbon leakage outside of the EU.

77. Which of the following are recognised as pathways to reduce carbon intensity?

(Select all that apply)

- A. Restrict consumer access to carbon intensive products.
- B. Substitute consumption of carbon intensive products.
- C. Reduce carbon intensive production by recycling.
- D. Decarbonise primary production of products.

78. Use the drag and drop function to identify 3 of the 5 target areas the Global Commission on Adaptation has highlighted as offering the potential for significant returns on investment.

Early warning systems	1.
Relocation subsidies for high flood risk areas	2.
Improved dryland agriculture	3.
Sustainable fishing methods	
Water source resilience	

79. The Institutional Investors Group on Climate Change (IIGCC) and Principles for Responsible Investment (PRI) suggest that private equity investors should incorporate due diligence assessments that consider impact of

(Select all that apply)

- A. Compliance costs.
- B. Regulation.
- C. Physical climate risk.
- D. Supply chain risks.

80. Which of the following companies has the lowest carbon intensity?

Company	Revenue	Scope 1 -2 emissions
1	6,000,000	650,000
2	9,000,000	850,000
3	8,000,000	900,000
4	10,000,000	1,100,000

- A. Company 1.
- B. Company 2.
- C. Company 3.
- D. Company 4.

81. Are the following statements about the impact of climate change considerations on loan pricing **True** or **False**, according to the research findings of the Bank for International Settlements (BIS)?

#1 CO₂ emissions are generally priced at a lower risk premium than fossil fuel industries. _____

#2 Scope 1 carbon emissions are generally priced in but indirect emissions are not. _____

#3 Green banks do not appear to price carbon risk differently from other banks. _____

82. A climate scientist is asked to explain why climate feedbacks make the modelling and accounting of climate outcomes more challenging than it would otherwise be.

How should they respond?

- A. Positive feedbacks will reduce global warming while negative feedbacks will increase global warming.
- B. Positive feedbacks will increase global warming while negative feedbacks will decrease global warming.
- C. Positive feedbacks will reduce the effect of a change to the climate system while negative feedbacks will amplify the effect of a change.
- D. Positive feedbacks will amplify the effect of a change to the climate system while negative feedbacks will reduce the effect of a change.

83. Are the following statements related to embodied carbon associated with real estate **True** or **False**?

#1 There is no single standardised approach for measuring embodied carbon.

#2 The World Green Building Council does not currently require embodied carbon to be included in net zero commitments. _____

84. Which of the following are recognised limitations of managing direct investment in infrastructure?

(Select all that apply)

- A. There is a complex, multi-stakeholder environment.
- B. It is difficult for investors to take an active role in their investments.
- C. There is relatively little available data and reporting requirements are less stringent than for public companies.
- D. The physical nature of infrastructure assets and their long-term nature makes them highly exposed to both transition and physical risk.

85. Khalid is a data modeller for VD Asset Management. He has been asked to construct a Discounted Cash Flow (DCF) framework for climate scenario analysis for his equity department.

Khalid provided his initial template for adjustments to the income statement in a table below:

		Company A
Scope 1 and 2 GHG emissions	M tCO ₂ e	81
Estimated carbon price	\$	55
Carbon cost	\$	3,726
Cost pass through	%	50%
To add to sales	\$	1,863
To add to carbon costs	\$	3,726

How could Khalid improve the quality of his evaluation of the effective carbon price?

(Select all that apply)

- A. Adjust for changes to expected inflation.
- B. Adjust for any free allowances/exemptions.
- C. Adjust for increases/decreases to nominal interest rates.
- D. Adjust for estimated increases/decreases in future allowances.

86. Fiona is a wealthy philanthropist who wants her investment capital to be allocated to companies which are actively working to reduce greenhouse gas emissions. She makes a large investment in a bond issued by an engineering company which intends to use the capital raised to complete development of an innovative new process to capture carbon dioxide from the atmosphere.

Which investment approach has Fiona followed?

- A. Impact investing.
- B. Best in class investing.
- C. Thematic investing.
- D. Exclusion investing.

87. Which region does **not** have a stewardship code that addresses ESG or climate (as of 2021)?

- A. Europe.
- B. Japan.
- C. United Kingdom.
- D. United States.

88. Drag and drop, into the relevant column, those measures which represent **engineered solutions** and those which represent **nature based solutions** to adapting grey infrastructure to the risk of extreme urban heat events.

	Engineered solutions	Nature based solutions
Retrofitting air conditioning in public transport stations		
Building green roofs on top of state-owned schools		
Using wider canopies on shops to shade residential streets		
Planting additional trees alongside train tracks and major roads		

89. According to the Investment Consultants Sustainability Working Group (ICSWG) *Guide for assessing climate competency of investment consultants*, which of the following is one of the categories where investment consultants should have competence in relation to climate change and against which their clients should hold them to account?

- A. Thought leadership and policy advocacy.
- B. Strength of opinion on climate change urgency.
- C. Knowledge of climate analytics product providers' capabilities.
- D. Assessment of investee companies and engagement with them.

90. Min-jun is part of a working group that is constructing an impact fund for Green World Fund Management. As part of the screening for the fund, Min-jun has been asked to recommend sector weightings, based on the potential for the largest GtCO₂e reductions by 2050.

Based on the findings of the Drawdown Project 2020, to which sector should Min-jun apply the **largest** weight?

- A. Buildings.
- B. Industry.
- C. Food, Agriculture & Land Use.
- D. Transportation.

Several questions are associated with the following case study. The material given in the case study will not change.

Stephanie manages a buy-and-hold fund, Diversified Real Estate (DRE), which invests in asset Real Estate Investment Trusts (REITs). She is assessing the performance of two REIT holdings. The fund has recently made a commitment to contribute to climate change mitigation by reducing its climate change footprint to a weighted average carbon intensity (WACI) of 35 tCO₂e/€ million revenue in 15 years.

Hotel REIT owns resorts in the Caribbean and has developed climate resilience plans, including back-up power, alternate supply chains, transportation, etc. This REIT is making efforts to reduce its GHG footprint especially to boost the resilience of the properties. For example, installing solar power also makes the resorts self-sufficient, while grey rain water systems can reduce the reliance on municipal water supply and reduce costs.

Office REIT owns Class A office buildings in the central business areas of a large European city. This REIT's climate strategy is two-fold. First, using green leases it attracts like-minded tenants concerned about climate change mitigation. Second, by instituting consistent climate change policies, climate-relevant information is taken into account in strategic and business decisions.

REIT	Floor Area (m ²)	GHG emissions intensity (kg CO ₂ e/m ²)	Revenue (€ million)	Portfolio weight
Hotel REIT	6,000	1,250	20	50%
Office REIT	20,000	8,000	50	50%

91. What information is most likely to be helpful for Stephanie in assessing risk exposure of the two REITs?

- A. Climate scenarios of physical climate impacts such as storm frequency, precipitation, and sea level rise will help Stephanie assess the regional exposure to physical risk.
- B. Climate-related policy changes to building codes, carbon taxes, and transportation modes will help Stephanie understand potential future increases in operational and capital costs.
- C. Climate change policies of the REIT managers as they pertain to asset management and asset acquisition to help Stephanie have comfort they are climate-aware.
- D. Portfolio weighted average carbon intensity to show Stephanie that the fund managers are actively monitoring the emissions of the REITs.

92. The Hotel REIT has a target intensity of 110 kg CO₂/m² euro in 15 years. The Office REIT has a target of 100 kg CO₂/m² in 15 years.

Assuming they both meet their target, what should Stephanie do so that DRE meets its carbon intensity target?

- A. Nothing. The DRE fund's WACI in 15 years will be close enough.
- B. Invest in another asset for the fund with a carbon intensity of 30 tCO₂e/€million revenue such that the fund proportions are Hotel REIT : Office REIT : New REIT = 45% : 45% : 10%.
- C. Sell some of their stake in the Office REIT and increase their stake in the Hotel REIT so that it is a 25:75 split, Office REIT and Hotel REIT, respectively.
- D. Sell some of their stake in the Hotel REIT and increase their stake in the Office REIT so that it is a 25:75 split, Hotel REIT and Office REIT, respectively.

93. What information would be **most helpful** for Stephanie to improve her climate risk scenario analysis to take into account the geographic location of the REIT assets?

(Select all that apply)

- A. Consistent and complete measures of embodied carbon for each local area and the REIT assets.
- B. Information on local climate resilience and the level of use of low-carbon building technology.
- C. Local electricity and heat emission factors to improve the quality of the GHG metrics.
- D. Whether the REITs intend to pursue local green certifications for their assets that include climate change performance tracking and/or targets.

94. Which of these represents the economic expense to society of an additional tonne of carbon in the atmosphere?

- A. The internal carbon price.
- B. The social cost of carbon.
- C. The carbon offset cost.
- D. The shadow price of carbon.

95. Xavier is working for a family office which has recently committed to align its investment policies with the Paris Agreement. The Chief Investment Officer has asked Xavier to evaluate direct and indirect approaches to influencing climate policy.

Which of the following is considered a **direct** approach?

(Select all that apply)

- A. Donation to Greenpeace.
- B. Donation to the Green Party in Germany.
- C. Membership to the Global Investor Coalition on Climate Change.
- D. Provision of infrastructure finance through a public-private partnership.

96. Under the Paris Agreement, who is responsible for determining the level of each Nationally Determined Contribution (NDC)?

- A. Individual countries.
- B. Developed countries.
- C. The Intergovernmental Panel on Climate Change (IPCC).
- D. The United Nations Framework Convention on Climate Change (UNFCCC).

97. A government official with responsibilities for climate change says that the high number of fossil fuel powered cars used in cities is the primary cause of the urban heat island effect for city dwellers. The official says that switching from cars with internal combustion engines to electric vehicles would have a co-benefit of reducing cardiovascular health issues.

Which of the statements made by the government official are **True / False**?

The statement about the urban heat island effect is _____ and the statement about the co-benefits of switching to electric vehicles is _____.

98. Using drag and drop, please indicate the key features of grey hydrogen, blue hydrogen and green hydrogen.

	Grey	Blue	Green
Adds carbon capture			
Produced by steam methane reforming			
Uses zero carbon electricity			
Is the cheapest to produce			
Has significant exposure to transition risk			

99. The underlying principles of a circular economy are

(Select all that apply)

- A. Keep materials in use.
- B. Regenerate natural systems.
- C. Design out waste and pollution.
- D. Stimulate demand for recycled products.

100. An analyst is creating a Discounted Cash Flow (DCF) model to use for climate scenario analysis. How should she incorporate abatement technology considerations in her free cash flow modelling?

(Select all that apply)

- A. Adjust tax charge for abatement technologies.
- B. Adjust working capital for abatement technologies.
- C. Adjust for increase in Research & Development (R&D) for abatement technologies.
- D. Adjust for capital expenditure for abatement technologies.

SPECIMEN PAPER: ANSWERS

Sequence Number	Learning Outcome	Correct Answer
1	2.1.2	B
2	2.2.4	D
3	1.1.1	C
4	1.1.5	B
5	2.1.3	D
6	8.3.1	(1) False; (2) False; (3) True
7	2.2.1	C
8	2.1.2	D
9	6.1.1	B
10	6.2.1	B, C, D
11	6.2.1	C
12	6.2.3	B
13	1.1.2	D
14	9.1.3	D
15	9.1.3	C, D
16	8.3.3	D
17	9.2.2	C
18	5.1.7	155.88 £/tCO ₂ e
19	5.1.4	311.11 tCO ₂ e/£million revenue
20	5.1.4	566.67 tCO ₂ e /£million revenue
21	9.2.2	B
22	9.1.2	B, C, D
23	9.2.1	B
24	9.1.3	D
25	2.1.1	D
26	5.2.1	C
27	3.2.4	C

28	5.1.6	D
29	5.1.8	B
30	5.1.9	C
31	4.2.1	D
32	4.3.4	Resilience of the project Case 1 and Case 2 Resilience through the project Case 3
33	5.2.2	D
34	5.2.5	C
35	5.2.6	C
36	3.1.5	C
37	5.2.7	D
38	5.1.1	B
39	10.1.3	(1) False; (2) True
40	5.2.4	A
41	7.1.2	B
42	7.2.3	B
43	9.1.3	C
44	8.4.1	(1) increase; (2) not change
45	7.2.2	C
46	7.1.3	A, C, D
47	7.1.4	A
48	7.1.4	B
49	7.1.5	D
50	7.2.1	B, C, D
51	7.2.2	A
52	7.2.2	A, B, C, D
53	7.2.4	C
54	8.2.2	B, C
55	7.2.6	A
56	7.2.7	A, B, D
57	3.1.2	A

58	3.1.4	C
59	3.2.4	A, B
60	3.2.1	B
61	8.2.1	A, D
62	3.2.5	A
63	3.2.6	D
64	4.2.1	(1) left; (2) fall; fall
65	10.1.4	C
66	4.2.2	C
67	5.1.4	B
68	8.4.3	C
69	10.2.1	D
70	8.2.2	B
71	5.2.6	D
72	8.3.1	Scope 3 carbon emissions for a real estate investment: Refurbishment of assets Building construction Energy for operational use procured by the tenant
73	3.2.4	B
74	9.3.2	C
75	7.1.2	B
76	3.1.1	(1) False; (2) True
77	4.1.2	B, C, D
78	4.3.1	3 Target Areas: Early warning systems Improved dryland agriculture crop production Water source resilience
79	8.1.2	A, B, C, D
80	8.2.3	B
81	8.2.5	(1) False; (2) True; (3) True
82	2.1.3	D
83	8.3.2	(1) True; (2) True
84	8.4.2	A, C, D
85	7.1.5	B, D
86	1.1.4	A

87	6.1.1	D
88	8.4.3	Engineered solutions: Retrofitting air conditioning in public transport stations Using wider canopies on shops to shade residential streets Nature based solutions: Building green roofs on top of state-owned schools Planting additional trees alongside train tracks and major roads
89	10.1.4	A
90	9.3.1	C
91	9.3.1	C
92	9.3.2	C
93	8.3.2	B, C
94	5.1.6	B
95	6.2.3	B, D
96	3.1.2	A
97	2.2.4	(1) False; (2) True
98	4.2.2	Grey: Produced by steam methane reforming; Is the cheapest to produce; Has significant exposure to transition risk Blue: Adds carbon capture; Produced by steam methane reforming; Has significant exposure to transition risk Green: Uses zero carbon electricity
99	4.1.2	A, B, C
100	7.1.5	C, D

ITEM SET RESPONSES: RATIONALE

Question 18: Answer 155.88 £/tCO₂e

Tests internal carbon price calculation (learning outcome 5.1.7)

Total cost of internal initiatives* = £320,000 + £210,000 = £530,000

* does not include complying with regulations

Internal carbon price = £530,000 / 3400 tCO₂e = **155.88 £/tCO₂e**

Question 19: Answer 311.11 tCO₂e/£million revenue

Tests portfolio carbon intensity calculation (learning outcome 5.1.4).

Company X portfolio holding = £15m/£150m = 10%

Company Y portfolio holding = £13m/£260m = 5%

Company Z portfolio holding = £16m/£160m = 10%

Portfolio carbon intensity = $(10\% \times 2,800 \text{ tCO}_2\text{e} + 5\% \times 3,400 \text{ tCO}_2\text{e} + 10\% \times 3,900) / (10\% \times £12\text{m} + 5\% \times £6\text{m} + 10\% \times £12\text{m}) = 840 \text{ tCO}_2\text{e} / £2.7\text{m} = \mathbf{311.11 \text{ tCO}_2\text{e}/£\text{million revenue}}$

Question 20: Answer 566.67 tCO₂e /£million revenue

Tests company carbon intensity calculation (learning outcome 5.1.4).

Company X Carbon intensity $(2,800 \text{ tCO}_2\text{e} / £12\text{m}) = 233.33 \text{ tCO}_2\text{e} / £\text{million revenue}$

Company Y Carbon intensity $(3,400 \text{ tCO}_2\text{e} / £6\text{m}) = \mathbf{566.67 \text{ tCO}_2\text{e} / £\text{million revenue}}$

Company Z Carbon intensity $(3,900 \text{ tCO}_2\text{e} / £12\text{m}) = 325 \text{ tCO}_2\text{e} / £\text{million revenue}$

Question 40: Answer A

- Tests temperature alignment analysis (learning outcome 5.2.4):

1. Assume the company-level overshoot applies to all companies. This is the method of least utility. Increase the temperature associated with the chosen global carbon budget by the same proportion, e.g. a 10% company level overshoot of a 2°C aligned sector-level carbon budget would mean a global temperature increase of 10% above 2°C, i.e. PTA = 2.2°C. This method can also be applied to portfolios by replacing the company over/undershoot with an unweighted average of portfolio company over/undershoots.

(Extract from learning materials).

- The unweighted average of company over/undershoots = $(15\% - 25\% + 10\% + 15\% + 10\%) / 5 = 5\%$. So, the portfolio level PTA = $2^\circ\text{C} \times (1 + 5\%) = 2.10^\circ\text{C}$.

Question 41: Answer B

- Tests understanding of EU Taxonomy activities (learning outcome 4.2.2 and specifically table 4.6) and how that is applied to equity and bond assessment of EU Taxonomy alignment (learning outcomes 7.1.2 and 7.2.3, respectively).
- Eligible investments are Emerald & Sage (15m) + Juniper (25m) + Olive (25m) = 65m.
- Activities, which are not aligned / covered in the EU Taxonomy as of 2021, are nuclear energy, natural gas for power generation, and landfill. If it is not clear if an activity is aligned (e.g. courier services could be airmail or long-distance road logistics, non-certified offices) it is assumed that they are not aligned/covered.
- Emerald & Sage, Juniper and Olive are selected because the exposure to a non-aligned/covered activity does not exceed 25%. In the case of Olive, nuclear energy is low carbon, but nuclear waste is a DNSH issue, water recycling is a circular economy activity with mitigation/adaptation benefits, and green hydrogen is produced using electrolyzers, with industrial scale electrolyzers needed for industrial applications.

- Chartreuse and Lime are not selected as they have over 25% exposure to a non-aligned/covered activity: natural gas for power generation and landfill without gas capture. Sustainable waste management is covered but landfill is not sustainable, unless with gas (methane) capture, and it is unclear if it does, so the assumption should be that it does not.

Question 42: Answer B

- Tests fixed income and green bond assessment (learning outcomes 7.2.1, 7.2.3) and application of EU Taxonomy to a portfolio of assets (learning outcome 7.1.2 applied at portfolio level).
- Weighted average alignment of holdings = 15m at 75% alignment for the SLB + 20m at 85% alignment for the SDG bond + 25m for Juniper at 75% alignment + 25m for Olive at 75% alignment = 77.35%.
- The ICMA Green Bond Principles are recommendations on disclosure and reporting, but do not define how to assess if financed assets, projects and activities are ambitious enough, e.g. to meet the goals of the Paris Agreement. The fund's requirement for EU Taxonomy alignment is the relevant driver for the selection as it provides a reference to the activities deemed sustainable and the required level of alignment.

Question 43: Answer C

- Tests the application of the EU Taxonomy to equities and fixed income (learning outcomes 7.1.2 and 7.2.3) as well as investment approaches and using scoring (learning outcome 9.1.3).
- C: Lime's score of 2 is higher than Chartreuse's score of 1.
- A is incorrect as the highest score is Emerald & Sage at 3. B is incorrect as Olive and Chartreuse have the same score. D is incorrect as Juniper's score is 2 and Olive's is 1.

Issuer	Taxonomy score	PTA score	Issuer score
Chartreuse	1	0	1
Emerald & Sage	1	2	3
Juniper	1	1	2
Olive	1	0	1
Lime	1	1	2

Question 44: Answers shown in bold below.

Barry expects that this new division could (1) **increase** the level of alignment and this will (2) **not change** his inclusion/exclusion decision.

- Tests understanding of the various types of adaptation and resilience measures (learning outcome 4.3.2) and nature based solutions (learning outcome 8.4.1) as well as the fact that the EU Taxonomy includes climate change adaptation as one of its 6

environmental objectives (learning outcome 4.2.2). It also tests bond assessment of EU Taxonomy alignment (learning outcome 7.2.3).

- Wetlands can sequester carbon and provide flood protection among other benefits, e.g. natural water filtration, biodiversity and ecosystem protection.

Question 66: Answer C

- Tests learning outcome 4.2.2: assessment of the range of climate change mitigation solutions.
- A, B and D are important, but C is the only option that speaks to the need to reduce Scope 1-3 emissions to achieve net zero.

Question 67: Answer B

- Requires calculation of a carbon metric, WACI, (learning outcome 5.1.4) for infrastructure project (learning outcome 8.4.3) using the investment amounts.
- The percent share that fund will own in each asset is also important as it speaks to the amount of leverage the fund will have on the board of the asset operating company.
- A gives the least control on the board of Asset 2 (25% share), and Asset 2 has the more complicated mitigation plan. Also, the WACI is above the fund's target of 100 tCO₂e/\$revenue.
- B gives a good balance of diversification and control on the board while keeping the portfolio WACI under the target of 100 tCO₂e/\$revenue: at 98 tCO₂e/\$revenue. The investment in Asset 1 is significant (60%), which would be beneficial as carbon intensity drops in due course, as a result of the planned energy efficiency upgrades and the installation of on-site renewables power generation. The stake in Asset 2 (35%) meets the minimum holding requirement and should be high enough engage actively in the oversight of the complex climate change plan.
- C satisfies the portfolio WACI and gives decent control on the board for both assets but provides less diversification than B and the holding in Asset 1 is below the minimum holding requirement (30% v 1/3).
- D meets the WACI target but does not provide any diversification.

	Asset 1	Asset 2	Asset 1	Asset 2	Portfolio
Value (millions of \$)	500	2000			1000
Carbon intensity (tCO ₂ e/revenue)	140	80			
	Fund equity (millions of \$)		Share of asset held		WACI
A	500	500	100%	25%	110
B	300	700	60%	35%	98
C	150	850	30%	42.5%	89
D	0	1000	0%	100%	80

Question 68: Answer C

- Tests application of key tools and metrics to direct investment in infrastructure / physical risks (learning outcome 8.4.3).
- C is the only one that includes both relevancy to the specific asset (because physical risks are both local and impact is specific to the type of asset) and provides a technical analysis.
- B and D are both relevant, but incomplete on their own.
- A may or may not provide the detailed information on the physical risk, e.g., likelihood and may only speak to plans put in place so Huang will not be able to judge the adequacy of the plans.

Question 91: Answer C

- Tests analysis of climate-related risks and opportunities by sector and geography (learning outcome 9.3.1). Also tests understanding of real estate analysis and how metrics are applied for property (section 8.3.2).
- The property-related characteristics of the two funds are the sub-sector (resorts versus offices) and geography (Caribbean versus Europe), and both can impact physical and transition risk analysis.
- C covers the understanding and management of both physical and transition risks, includes mitigation and adaptation planning, existing and future assets under management.
- A and B are both correct but incomplete as they identify either only physical or only transition risks.
- D is incomplete as it would only provide historical information.

Question 92: Answer C

- Tests assessment of a portfolio’s carbon intensive exposure using revenue-based metrics (learning outcome 9.3.2). Also tests understanding of real estate analysis and how metrics are applied for property (section 8.3.2).
- First, it is important to recognise that the WACI to be calculated is in 15 years, so the asset carbon intensity should not be taken from the case table but from the question.
- Next, the asset GHG intensity by floor area needs to be converted into revenue-based intensity.
- Finally, the revenue-based REIT carbon intensity figures are used in the portfolio-level WACI calculation.

REIT	Carbon intensity (kgCO ₂ e/m ²)		Carbon intensity (tCO ₂ e/€millions)			Portfolio weight			Portfolio WACI
	Hotel	Office	Hotel	Office	New	Hotel	Office	New	
A	110	100	33	40	30	50%	50%	0%	36.50
B	110	100	33	40	30	45%	45%	10%	35.85
C	110	100	33	40	30	75%	25%	0%	34.75
D	110	100	33	40	30	25%	75%	0%	38.25

REIT Carbon Intensity = tCO₂e emissions / € million revenue

where tCO₂e emissions = REIT carbon intensity in kgCO₂e/m² x floor area in m² / 1000

Hotel REIT = (110 kgCO₂e/m² x 6,000 m² / 1000) / 20 € million = 33 tCO₂e/€ million

Office REIT = (100 kgCO₂e/m² x 20,000 m² / 1000) / 50 € million = 40 tCO₂e/€ million

Portfolio WACI = Hotel REIT weight x Hotel REIT carbon intensity + Office REIT weight x Office REIT carbon intensity + New REIT weight x New REIT carbon intensity

C: WACI = 75% x 33 tCO₂e/€ million + 25% x 40 tCO₂e/€ million + 0% x 30 tCO₂e/€ million = 34.75 tCO₂e/€ million

A, B and D have a portfolio WACI in 15 years that exceeds the target level of 35 tCO₂e/€ million.

Question 93: Answers: B and C

- Tests application of key tools and metrics to real estate climate analysis (learning outcome 8.3.2).
- B is correct as it captures adaptation considerations and transition risk aspects, which may contribute to mitigation – e.g. more efficient heating and cooling, use of smart windows, etc.
- C is also correct as it is focused on emissions and these factors are sensitive to local conditions.
- A is not correct as (1) embedded carbon is a historical measure while scenario analysis is forward looking and (2) there is no agreed methodology on how to calculate embedded carbon, so measures are idiosyncratic, not consistent and not complete across regions and asset types.
- D references local certifications, but the intention to obtain them is not sufficient to assume they can be factored into scenario analysis, particularly if it is unclear what they will track.