



# CFA UK LEVEL 4 CERTIFICATE IN CLIMATE & INVESTING

## SPECIMEN PAPER

Version 2: Tested from 01 April 2023

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"><li>• Standard multiple choice – candidates select 1 option of 4.</li><li>• Multiple response multiple choice – candidates select <b>two</b> answers that apply These questions will clearly state ‘Select <b>two</b> options that apply’.</li><li>• Gap fill – candidates must enter a specific response.</li><li>• Drag and drop – candidates must drag and drop the selected response into the correct field.</li><li>• 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</li><li>• 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.</li></ul>

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.

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## SPECIMEN PAPER: QUESTIONS

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

(Select **two** options that apply)

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

2. Which of the following is **not** a target of the EU Climate Transition Benchmark?

- A. Increase comparability.
- B. Provide diversification.
- C. Improve transparency.
- D. Prevent greenwashing.

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

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

**Questions 4 through 6 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 three companies, Alpha, Beta and Gamma. He has gathered the following information:

	<b>Alpha</b>	<b>Beta</b>	<b>Gamma</b>
Investment value in portfolio (\$ million)	20	25	15
Revenue (\$ million)	30	15	25
Market capitalisation (\$ million)	360	420	210
Annual GHG emissions (tCO <sub>2</sub> e)	3,700	4,100	4,300
Cost of purchasing green power (\$)	360,000	240,000	410,000
Cost of complying with climate-related disclosure regulation (\$)	160,000	120,000	80,000
Cost of offsetting GHG emissions (\$)	150,000	180,000	120,000

4. An analyst calculates an internal carbon price (ICP) for Alpha and Gamma, expressed in \$/tCO<sub>2</sub>e. Which of the following statements is **correct**?
- A. Alpha's ICP (102.44) is lower than Gamma's ICP (123.26).
  - B. Gamma's ICP (123.26) is lower than Alpha's ICP (137.84).
  - C. Alpha's ICP (131.71) is lower than Gamma's ICP (141.86).
  - D. Gamma's ICP (141.86) is lower than Alpha's ICP (181.08).
5. The analyst then calculates carbon intensity figures for the three companies. Alpha's carbon intensity, expressed as tCO<sub>2</sub>e/\$m invested, is **closest** to
- A. 123
  - B. 164
  - C. 172
  - D. 185

6. The portfolio manager asks for the portfolio total carbon intensity. The analyst replies that, expressed in tCO<sub>2</sub>e/\$m revenue, it is **approximately**

- A. 174
- B. 198
- C. 217
- D. 222

**End of case**

7. 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.
8. 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).
9. When there is no absolute relationship between any given climate factor and the risks which the real-economy assets and individuals that they represent are exposed to, climate scores can be **best** described as
- A. Externally consistent and dependent.
  - B. Internally consistent and normalised.
  - C. Relative and normalised.
  - D. Relative and dependent.

**Question 10 through 14 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 (2021). The eligibility threshold is set at 75% alignment to sustainable activities that provide substantial contribution to climate change mitigation only.

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/undershoot (%)	Potential size of investment (EUR m)
Chartreuse Power Utility	Equity	60% hydropower electricity 40% diesel district heating	+15%	20
Emerald & Sage Group	Equity	50% EV charging equipment leasing 30% bicycle rentals 20% courier services	-25%	15
Juniper REIT	Bond	75% LEED Platinum or EPC A offices 25% non-certified office buildings	+10%	25
Lime Public Services	Bond	70% recycling plant 30% waste collection and landfill	+10%	15
Olive Industrial Systems	Bond	40% water recycling systems 35% industrial scale electrolyzers 25% nuclear fuel transport services	+15%	25

**10.** 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

11. 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 and all relevant thresholds are met.

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

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

12. 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 exposure** 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%

13. To identify the best investment 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.

14. Barry reads that Lime Public Services will assume responsibility for the conservation and management of a protected river delta wetland park, increasing revenues by 10%.

Are the following statements by Barry **TRUE** or **FALSE**?

**Statement #1:** Adding the new division would lead to the level of alignment increasing. \_\_\_\_\_

**Statement #2:** The assessment whether or not the bond meets the eligibility criteria would change. \_\_\_\_\_

**End of case**



**Questions 15 through 17 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 set a WACI target of 100 tonnes of CO<sub>2</sub>e 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 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 <sub>2</sub> e/revenue)	140	80

**15.** 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.

16. 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 \$1,000m in Asset 2.

17. 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.

**End of case**

**Questions 18 through 20 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 of 35 tCO<sub>2</sub>e/€ 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. Grey rain water systems that reduce the reliance on municipal water 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 <sup>2</sup> )	GHG emissions intensity (kg CO <sub>2</sub> e/m <sup>2</sup> )	Revenue (€ million)	Portfolio weight
Hotel REIT	6,000	1,250	20	50%
Office REIT	20,000	8,000	50	50%

- 18.** 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 framework relating to the acquisition and ongoing management of the underlying properties to give Stephanie comfort in each REIT's climate awareness.
  - D. Portfolio weighted average carbon intensity to show Stephanie that the fund managers are actively monitoring the emissions of the REITs.

19. Hotel REIT has a target intensity of 110 kg CO<sub>2</sub>e/m<sup>2</sup> euro in 15 years. Office REIT has a target of 100 kg CO<sub>2</sub>e/m<sup>2</sup> 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 tonnes of CO<sub>2</sub>/million euro revenue such that the fund proportions are Hotel REIT: Office REIT: New Asset = 45%:45%:10%
  - C. Sell some of their stake in Office REIT and increase their stake in Hotel REIT so that it is a 25:75 split, Office REIT and Hotel REIT, respectively.
  - D. Sell some of their stake in Hotel REIT and increase their stake in Office REIT so that it is a 25:75 split, Hotel REIT and Office REIT, respectively.
20. What information would be **most** helpful for Stephanie to improve her climate risk scenario analysis to into account the geographic location of the REIT assets?

(Select **two** options 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 green certifications for their assets that include climate change performance tracking and/or targets.

**End of case**

21. 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.

22. Which of these greenhouse gases has the **highest** global warming potential (GWP)?

- A. Nitrous oxide (N<sub>2</sub>O).
- B. Methane (CH<sub>4</sub>).
- C. Carbon Dioxide (CO<sub>2</sub>).
- D. Fluoroform (HFC-23).

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

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

24. 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.

**25.** Camille is a fixed income portfolio manager for Walsh Ltd. and is undertaking a climate-related sensitivity analysis of her portfolio.

Which of the following does she **not** need to consider in her analysis?

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

**26.** A fund manager has been asked to construct a summary of potential holdings across industries for a new climate-focused equity fund. In doing so, they have been asked to employ a strategy which maximises diversification.

Which strategy / strategies should they **exclude**?

(Select **two** options that apply)

- A. Best-in-class strategy.
- B. ESG Tilting strategy.
- C. Impact strategy.
- D. Thematic strategy.

27. 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
A2	Transport (bus)	0.1089	3	1.00	IG	2	5.50%
B2	Transport (air)	0.5925	1	-1.50	IG	4	4.50%
C2	Waste (recycling)	0.0189	5	1.25	Sub-IG	5	3.50%
D2	Utilities (heating)	0.1234	4	1.50	IG	4	2.50%

*Notes to the table*

- Carbon Intensity, measured by Scope 1 and 2 CO<sub>2</sub> tonnes/\$m 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 A2.
- B. Company B2.
- C. Company C2.
- D. Company D2.

28. 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 GtCO<sub>2</sub>e reductions by 2050.

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

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

29. 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.

30. 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.

31. Which of the following metrics will normalise carbon emissions against the size of a company so that its decarbonisation rate can be compared to other companies in a sector under a given transition pathway?

- A. Weighted average carbon intensity.
- B. Total carbon emissions.
- C. Carbon emissions.
- D. Carbon intensity.

32. 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 and will have a single return forecast.
- D. Range of carbon budgets and a range of return forecasts.



33. Which of the following assumptions would make it **likely to underestimate** the relationship between physical climate change and regional 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.
34. Why can the ex-ante determination of the accuracy of Transition C-VaR 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.
35. Which of the following is **correct** regarding the use of notional carbon tax rates in 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.
36. 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.

37. 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.

38. 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.

39. SSP Ltd is an integrated utility. The Board is under pressure from shareholders to reduce its emissions.

Which of the following measures would be the **least** effective?

- A. Carbon capture and storage.
- B. Switch to renewable energy sources.
- C. Switch company fleet to electric vehicles.
- D. Innovate to reduce production-related GHG emissions.

40. Bravo 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. Eco label.

41. Manuel is an analyst for Beta Capital, 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 Transition Pathway Initiative's assessment of strategic positioning on climate risk.

Which of the following indicators are **not** relevant in his cash flow forecasts?

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

42. David works as an analyst for Premium Oil, an integrated oil and gas company, based in the Gulf of Mexico. He has been asked to consider the likely impact across Premium Oil's 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.

43. Which of the following is **not** a requirement of the Sustainable Accounting Standards Board (SASB) under their oil & 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.

44. Angela, 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.

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

(Select **two** options that apply)

- A. Access to the CFO / Treasurer.
- B. Access to the Board and CEO.
- C. Limited influence beyond primary issuance.
- D. Undisclosed representation across the capital structure.

46. 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 KPIs.
- D. Public access to bond documentation.

47. Diego works in the treasury department of London 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.

48. 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.

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

- A. Integrated oil companies.
- B. Commodity chemicals.
- C. Global REITs.
- D. Auto manufacturing.

**50.** 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 **two** options 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.

**51.** 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.

**52.** 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).

- 53.** How frequently **must** Nationally Determined Contributions (NDC) 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.
- 54.** How are carbon budgets set into UK law under the UK Climate Change Act 2008?
- A. By UK Government based on IPCC recommendations.
  - B. By UK Parliament based on CCC recommendations.
  - C. By UK Government based on CCC recommendations.
  - D. By UK Parliament based on IPCC recommendations.
- 55.** What GHG emissions disclosures are recommended by Task Force on Climate Related Financial Disclosures (TCFD)?
- A. Scope 1 is recommended and Scope 2 & 3 when applicable.
  - B. Scope 1 & 2 are recommended and Scope 3 when applicable.
  - C. Scope 1, 2 and 3 are recommended.
  - D. Scope 1, 2 or 3 when applicable.
- 56.** Which body was responsible for establishing the Task Force on Climate-related Financial Disclosures (TCFD)?
- A. The Financial Stability Board (FSB).
  - B. The Financial Reporting Council (FRC).
  - C. The Financial Accounting Standards Board (FASB).
  - D. The International Accounting Standards Board (IASB).

57. A portfolio manager includes the following statement in its annual report, regarding portfolio GHG emissions as reported under the Task Force on Climate-related 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 CO<sub>2</sub>e / \$M revenue. Our portfolio had an average carbon intensity of 73 tonnes CO<sub>2</sub>e / 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 CO<sub>2</sub>e / \$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.

58. 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.

59. 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 cardio-vascular health issues.

Which of the statements made by the government official are **TRUE / FALSE**?

Important! Do not include spaces or symbols.

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



60. Which of the following is the **most** likely explanation for the shortfall of private sector investment in adaptation and resilience projects?

- A. The shortage of large investable projects.
- B. The time horizon of investment returns.
- C. The lack of public sector funding.
- D. The lack of economic benefits.

61. 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			

62. 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.

63. Which of the following actions by a fund manager would **most** closely relate to the 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.

64. A company has only one small green project and believes it is not enough to issue a Use of Proceeds (UoP) instrument.

How does that affect their ability to issue sustainability linked debt?

- A. The company may still be able to issue sustainability linked loans (SLLs) but not sustainability linked bonds (SLBs).
- B. The company may still be able to issue either sustainability linked loans (SLLs) or sustainability linked bonds (SLBs).
- C. The company may still be able to issue sustainability linked bonds (SLBs) but not sustainability linked loans (SLLs).
- D. The company will not be able to issue either sustainability linked loans (SLLs) or sustainability linked bonds (SLBs).

65. Using the Carbon Risk Real Estate Monitor (CRREM), which of the following could **not** be a consequence if the GHG intensity of a real estate asset exceeds the Paris aligned decarbonisation pathway?

- A. The asset may become a stranded asset.
- B. The asset should be identified as loss making and sold.
- C. The asset may become liable for a carbon price penalty.
- D. The asset should be retrofitted with energy efficiency measures.

66. 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		

67. 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%

68. 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?

Please select **TRUE / FALSE**

Important! Do not include spaces or symbols.

**Statement #1** - Free emission allowances were allocated to aviation and shipping companies \_\_\_\_\_

**Statement #2** - Enhanced focus on imports to deter carbon leakage outside of the EU \_\_\_\_\_

69. 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	

70. Which of the following comparisons are **not** set out in the Multilateral Development Banks' *Framework and Principles for Climate Resilience Metrics*?

- A. Diagnostics and impacts.
- B. Project design and results.
- C. Strategy and implementation.
- D. Adaptation finance and resilience outcome.

71. Are the following statements about the impact of climate considerations on private equity valuations **TRUE** or **FALSE**?

Important! Do not include spaces or symbols.

**Statement #1** - Revenue growth is likely to stall as consumer demand for net zero products is untested. \_\_\_\_\_

**Statement #2** - Low carbon solutions generally require low levels of capital expenditure. \_\_\_\_\_

72. 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.

**73.** 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)?

Important! Do not include spaces or symbols.

**Statement #1** CO<sub>2</sub> emissions are generally priced at a lower risk premium than fossil fuel industries \_\_\_\_\_

**Statement #2** Scope 1 carbon emissions are generally priced in but indirect emissions are not \_\_\_\_\_

**Statement #3** Green' banks do not appear to price carbon risk differently from other banks \_\_\_\_\_

**74.** Are the following statements about the World Green Building Council's Whole Life Carbon Vision **TRUE** or **FALSE**?

Important! Do not include spaces or symbols.

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

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

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

**75.** Are the following statements about the World Green Building Council's Whole Life Carbon Vision **TRUE** or **FALSE**?

Important! Do not include spaces or symbols.

**Statement #1** All buildings must be net zero operational carbon by 2050. \_\_\_\_\_

**Statement #2** New buildings will have at least 50% less embodied carbon by 2050. \_\_\_\_\_

**76.** Are the following statements related to embodied carbon associated with real estate **TRUE** or **FALSE**?

Important! Do not include spaces or symbols.

**Statement #1** There is no single standardised approach for measuring embodied carbon. \_\_\_\_\_

**Statement #2** The World Green Building Council does not currently require embodied to be included in net zero commitments. \_\_\_\_\_

**77.** What term is used to describe a large-scale, long-term shift in the planet's weather patterns and average temperature?

- A. Climate change.
- B. Meteorological shift.
- C. Carbonisation.
- D. Erosion.



**78.** Are the following statements related to GRESB Infrastructure Fund Assessment and GRESB Infrastructure Asset Assessment **TRUE / FALSE?**

Important! Do not include spaces or symbols.

**Statement #1** Both Assessments provide the basis for systematic reporting, objective scoring and peer benchmarking of ESG management and performance. \_\_\_\_\_

**Statement #2** Both Assessments apply sector-based materiality weightings to tailor the assessment to different infrastructure sectors. \_\_\_\_\_

**79.** Which of the following is the group of central banks and supervisors integrating climate-related risks into supervision and financial stability?

- A. Climate Financial Risk Forum.
- B. Climate Change Adaptation Working Group.
- C. The Network for Greening the Financial System.
- D. International Organisation of Securities Commissions.

**80.** Which of the following is a feature of catastrophe bonds which differentiates them from comparable conventional bonds?

- A. Strong correlation with financial markets.
- B. Long term maturities extending 10 years and more.
- C. Investors stand to lose the principal if specific catastrophe happens.
- D. Investors stand to lose the principal if specific catastrophe does not happen.

81. If climate risk increases capital requirements for insurance companies, which of the following **most** directly helps to free existing capital?

- A. Sidecars.
- B. Equity shares.
- C. Catastrophe bonds.
- D. Industry loss warranties.

82. With respect to the impact of carbon pricing in mandatory carbon markets on companies, which of the following statements is **incorrect**?

- A. The proportion of a company's emissions covered by carbon pricing is crucial to understanding the impact.
- B. Companies can only be adversely affected by mandatory carbon markets.
- C. Companies with a very low carbon footprint can be significantly impacted through the indirect supply chain costs.
- D. The competitive position of a company is crucial to understanding the impact.

83. A wildfire in British Columbia destroys a forest designated for carbon offset.

This risk of the offset market is referred to as

- A. Scalability.
- B. Additionality.
- C. Permanence.
- D. Quantification.

84. Claudia is an ESG specialist at an energy company. The company has a biomass plant in Malaysia which is exposed to the risk of coastal erosion. Claudia is asked to suggest a nature-based solution to manage the risk.

An appropriate solution is to

- A. Build a concrete jetty.
- B. Place tetrapods along water front.
- C. Restore mangrove.
- D. Dredge sand to extend the land mass.

85. Khalid is a data modeller for VD Asset Management. He has been asked to construct a 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 <sub>2</sub> 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 **two** options 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. 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.

87. 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.

88. Which of these greenhouse gases has the **lowest** global warming potential (GWP)?

- A. N<sub>2</sub>O.
- B. CH<sub>4</sub>.
- C. CO<sub>2</sub>.
- D. HFC-23.

89. Which of the following describes how the issue of climate change impacts on an investor's portfolio?

- A. It is a systemic issue which only affects the tangible assets of holdings in the energy sector.
- B. It is a non-systemic issue which only affects tangible assets of holdings across all sectors.
- C. It is a systemic issue which affects all sectors and all assets.
- D. It is a non-systemic issue which can be fully diversified away.

90. 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.

91. 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.

92. 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 metre<sup>2</sup>.

93. 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.

94. 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.

95. 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. | <b><u>Outcome 1</u></b>                | <b><u>Outcome 2</u></b>                |
|    | Tropical storms will be less frequent. | Tropical storms will be stronger.      |
| B. | <b><u>Outcome 1</u></b>                | <b><u>Outcome 2</u></b>                |
|    | Tropical storms will be weaker.        | Tropical storms will be more frequent. |
| C. | <b><u>Outcome 1</u></b>                | <b><u>Outcome 2</u></b>                |
|    | Tropical storms will be weaker.        | Tropical storms will be less frequent. |
| D. | <b><u>Outcome 1</u></b>                | <b><u>Outcome 2</u></b>                |
|    | Tropical storms will be more frequent. | Tropical storms will be stronger.      |

96. 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.

97. Which region does **not** yet have a stewardship code that addresses ESG or climate?

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

98. 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 is Helene **least** likely to need to think through as she prepares an engagement strategy?

- 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.

99. 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 CEO from lobbying.
- D. Request a board-level engagement on corporate climate lobbying alignment and request meetings.

**100.** Which of the following processes does the Science Based Targets initiative (SBTi) **not** require from companies setting science-based targets?

- A. Establish a renewable energy usage target.
- B. Submit a letter establishing intent to set a science-based target.
- C. Report company-wide emissions and track target progress annually.
- D. Work on an emissions reduction target in line with the SBTi's criteria.



<b>Sequence Number</b>	<b>Learning Outcome</b>	<b>Correct Answer</b>
1	10.1.4	C, D
2	10.2.1	B
3	10.2.1	C
4	8.3.1	B
5	5.1.3	D
6	5.1.3	A
7	5.1.6	B
8	5.1.6	C
9	5.2.3	B
10	5.2.7	A
11	7.1.2	B
12	7.2.3	B
13	10.1.4	C
14	4.2.2	(1) True; (2) False
15	4.1.2	C
16	5.1.3	B
17	9.2.3	C
18	9.1.5	C
19	10.3.2	C
20	9.1.5	B, C
21	6.2.3	B
22	1.1.1	D
23	10.1.4	C
24	10.2.2	B
25	10.1.3	A
26	10.1.4	C, D
27	10.1.4	D
28	4.1.2	C
29	8.3.1	D
30	8.3.1	B
31	5.1.5	D
32	5.2.2	D
33	5.2.4	C

34	5.2.5	C
35	5.2.5	D
36	5.2.6	D
37	5.1.1	B
38	7.1.2	B
39	7.1.2	A
40	7.2.2	C
41	7.1.3	B
42	7.1.4	A
43	7.1.4	B
44	7.1.5	D
45	7.2.1	B, C
46	7.2.2	A
47	7.2.4	C
48	7.2.6	A
49	7.2.7	C
50	6.2.3	B, D
51	2.1.1	A
52	3.1.1	A
53	3.1.1	C
54	3.1.2	B
55	3.2.3	B
56	3.2.1	A
57	3.2.3	A
58	3.2.5	D
59	2.2.6	(1) False; (2) True
60	4.2.1	B
61	4.1.2	<b>Grey:</b> Produced by steam methane reforming; Is the cheapest to produce; Has significant exposure to transition risk <b>Blue:</b> Adds carbon capture; Produced by steam methane reforming; Has significant exposure to transition risk <b>Green:</b> Uses zero carbon electricity
62	1.2.2	C
63	10.1.4	D
64	8.2.2	B
65	9.1.2	B

66	9.2.3	<b>Engineered solutions:</b> Retrofitting air conditioning in public transport stations Using wider canopies on shops to shade residential streets <b>Nature based solutions:</b> Building green roofs on top of state-owned schools Planting additional trees alongside train tracks and major roads
67	10.3.2	C
68	3.1.2	(1) False; (2) True
69	4.2.1	<b>3 Target Areas:</b> Early warning systems Improved dryland agriculture crop production Water source resilience
70	4.2.4	C
71	8.1.4	(1) False; (2) False
72	5.1.5	B
73	8.2.5	(1) False; (2) True
74	9.1.1	(1) False; (2) False; (3) True
75	9.1.1	(1) True; (2) False
76	9.1.2	(1) True; (2) True
77	1.1.1	A
78	9.2.4	(1) True; (2) False
79	3.1.5	C
80	7.3.1	C
81	7.3.2	A
82	8.3.3	B
83	8.3.4	C
84	9.2.2	C
85	7.1.5	B, D
86	2.1.2	B
87	2.2.6	D
88	1.1.1	C
89	1.1.4	C
90	1.2.1	A
91	1.1.3	B
92	2.1.3	D
93	2.1.2	D
94	2.2.1	C
95	2.1.2	D
96	6.1.1	B

97	6.1.1	D
98	6.2.1	A
99	6.2.1	C
100	5.1.7	A

### ITEM SET RESPONSES: RATIONALE

#### Question 4: Answer B

Internal carbon price should not include the cost complying with climate-related disclosure regulation

Alpha  $(360,000 + 150,000) / 3700 = 137.84$

Beta  $(240,000 + 180,000) / 4100 = 102.44$

Gamma  $(410,000 + 120,000) / 4300 = 123.26$

#### Question 5: Answer D

Alpha  $3700 / 20 = 185 \text{ tCO}_2\text{e}/\$m \text{ invested}$

#### Question 6: Answer A

The metric normalises the portfolio attributed emissions by the portfolio attributed revenues.

$$\text{Portfolio total carbon intensity} = \frac{\sum \frac{\text{investment } i}{\text{market cap } i} \times \text{emissions } i}{\sum \frac{\text{investment } i}{\text{market cap } i} \times \text{revenue } i} = \frac{\frac{20}{360} \times 3700 + \frac{25}{420} \times 4100 + \frac{15}{210} \times 4300}{\frac{20}{360} \times 30 + \frac{25}{420} \times 15 + \frac{15}{210} \times 25} =$$

### Question 10: 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 =  $2^\circ\text{C} * (1 + 5\%) = 2.10^\circ\text{C}$ .

### Question 11: Answer B

- Tests understanding of EU Taxonomy activities (learning outcome 3.1.4 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.
- Emerald & Sage, Juniper and Olive are selected because the exposure to a nonaligned/covered activity does not exceed 25%. The case specifically states that eligibility requires that the threshold is met taking into account only activities that provide substantial contribution to climate change mitigation. This rules out fossil gas and nuclear; plus nuclear is limited to power generation in the complementary climate change delegated act from 2022. Landfill without gas capture is also not aligned. If it is not clear if an activity is aligned (e.g. courier services could be airmail or long-distance road logistics, noncertified offices) it is assumed that they are not aligned/covered.

**Question 12: 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%.
- While all the bonds on the list are labelled green, the relevant driver is the fund’s requirement for EU Taxonomy alignment. The label does not equate to such alignment – 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, nor is there a limitation to the sustainable activities as per the EU Taxonomy.
- There is an eligible equity option but the stem question specifically asks about the bond portfolio

**Question 13: 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 14: Answers shown in bold below.**

- Tests understanding of the various types of adaptation and resilience measures (learning outcome 4.3.2) and nature based solutions (learning outcome 9.2.3) as well as the fact that the EU Taxonomy includes climate change adaptation as one of its 6 environmental objectives (learning outcome 3.1.4). 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. This makes the addition eligible.

### Question 15: 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 16: 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 tCO<sub>2</sub>e/\$revenue.
- B gives a good balance of diversification and control on the board while keeping the portfolio WACI under the target of 100 tCO<sub>2</sub>e/\$revenue: at 98 tCO<sub>2</sub>e/\$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 <sub>2</sub> e/revenue)	140	80			
	<b>Fund equity (millions of \$)</b>		<b>Share of asset held</b>		<b>WACI</b>
A	500	500	100%	25%	110
<b>B</b>	<b>300</b>	<b>700</b>	<b>60%</b>	<b>35%</b>	<b>98</b>
C	150	850	30%	42.5%	89
D	0	1000	0%	100%	80

### Question 17: 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 18: 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 19: 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 <sub>2</sub> e/m <sup>2</sup> )		Carbon intensity (tCO <sub>2</sub> 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
<b>C</b>	<b>110</b>	<b>100</b>	<b>33</b>	<b>40</b>	<b>30</b>	<b>75%</b>	<b>25%</b>	<b>0%</b>	<b>34.75</b>
D	110	100	33	40	30	25%	75%	0%	38.25

REIT Carbon Intensity = tCO<sub>2</sub>e emissions / € million revenue

where tCO<sub>2</sub>e emissions = REIT carbon intensity in kgCO<sub>2</sub>e/m<sup>2</sup> x floor area in m<sup>2</sup> / 1000

Hotel REIT = (110 kgCO<sub>2</sub>e/m<sup>2</sup> x 6,000 m<sup>2</sup> / 1000) / 20 € million = 33 tCO<sub>2</sub>e/€ million

Office REIT = (100 kgCO<sub>2</sub>e/m<sup>2</sup> x 20,000 m<sup>2</sup> / 1000) / 50 € million = 40 tCO<sub>2</sub>e/€ 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 tCO<sub>2</sub>e/€ million + 25% x 40 tCO<sub>2</sub>e/€ million + 0% x 30 tCO<sub>2</sub>e/€ million = 34.75 tCO<sub>2</sub>e/€ million

A, B and D have a portfolio WACI in 15 years that exceeds the target level of 35 tCO<sub>2</sub>e/€ million.

**Question 20: 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.