2026 NTNU × University of Glasgow × Kyushu University

Winter Institute – Final Examination

1. How many water reservoirs are there in Japan?
A. about 1,500
B. about 15,000
C. about 150,000
Correct Answer: C

2. When were most of Japan's water reservoirs constructed?
A. about 20 years ago
B. about 100 years ago
C. about 400 years ago
Correct Answer: C

3. What animals have been destroying the levees of Japan's water reservoirs in recent years?
A. Mouse
B. Wild boar
C. Bear
Correct Answer: B

4. Which of the following three options does the description below refer to?
The benefits that people obtain from ecosystems, include 4 sub categories such as provisioning of food, water, wood, and fiber; regulating climate; provide recreational, aesthetic, and spiritual benefits; infrastructural services such as nutrient cycling, soil formation, and photosynthesis.
A. ecosystem benefits
B. ecosystem capital
C. ecosystem services
Correct Answer: C

5. What are the central themes addressed by IPBES in its project?
A. Biodiversity conservation
B. Basic education
C. Bird conservation
Correct Answer: A

6. In the concept of "Worldmaking" discussed in Part I, how is the "reality" we live in considered to be formed? Choose the most appropriate answer.
A. It exists as an objective and unchanging fact, independent of our perception.
B. It is constructed by "versions" such as the language, symbols, and narratives we use.

C. It is a physical phenomenon proven solely by scientific data.
D. It is an illusion existing only within the individual and cannot be shared with others.
Correct Answer: B

7. What does the concept of "More-than-death" discussed in the lecture imply about human death?
A. We should live forever by saving our brain data to the cloud via technology.
B. Biological death is not the absolute end; one's existence continues as "stories" and "connections" inherited by others.
C. It is an attempt to scientifically prove the reality of the afterlife or souls.
D. Humans are so afraid of death that they try to forget it by immersing themselves in work and activities.
Correct Answer: B

8. What attitude of our current generation does the concept of "Colonization of the Future" criticize?
A. Investing huge budgets in space exploration to unilaterally colonize habitats other than Earth.
B. The current generation prioritizing short-term benefits and pleasure, imposing the costs (environmental destruction, public debt) on future generations who have no voice.)
C. Attempting to control all future events using technologies like AI.
D. Ignoring historical traditions and culture, and designing society based solely on modern values.
Correct Answer: B

9. What attitude does "Cathedral Thinking" refer to?
A. Working only on projects that will be completed and appreciated within one's own lifetime.
B. Laying the first stone of a long-term project that one will not live to see completed.
C. A way of thinking specialized in designing religious architecture.
D. Prioritizing efficiency and speed to achieve maximum results in a short period.
Correct Answer: B

10. Which is the most appropriate attitude for living as a "Good Ancestor"?
A. Leaving as much financial assets as possible to one's own children and grandchildren.
B. Learning from the achievements of historical figures and strictly preserving past traditions without any changes.
C. Perceiving unseen future generations not as "strangers" but as "objects of care," and changing current actions to expand their options.

D. Focusing solely on solving the problems of the current generation and not thinking about the uncertain future.
Correct Answer: C

11. In forest hydrology, the basic water balance equation under stable soil water conditions is:
A. Precipitation = Evapotranspiration + Soil respiration
B. Precipitation = Runoff + Carbon sequestration
C. Precipitation = Evapotranspiration + Runoff
D. Precipitation = Transpiration + Interception
Correct answer: C

12. Which of the following processes is NOT a component of forest evapotranspiration?
A. Transpiration from leaves
B. Rainfall interception evaporation
C. Soil evaporation
D. Groundwater recharge
Correct answer: D

13. What generally happens to runoff after clear-cutting in a forested catchment?
A. Runoff decreases because precipitation decreases
B. Runoff increases because evapotranspiration decreases
C. Runoff does not change
D. Runoff decreases because soil evaporation increases
Correct answer: B

14. If all forests in a large basin were removed, what would most likely happen to runoff at the continental scale?
A. Runoff would definitely increase
B. Runoff would definitely decrease
C. Runoff response is unclear because precipitation may decrease
D. Runoff would remain unchanged
Correct answer: C

15. Which condition indicates that a forest ecosystem is acting as a carbon sink?
A. NEP < 0
B. GPP < Re
C. NEP > 0
D. Ra > Rh

Correct answer: C

16. What is the main vision of Kyushu University, as presented in the talk?
A. Driving integrative change with social knowledge
B. Driving social change with integrative knowledge
C. Driving integrative value with social mobility
D. Driving social value with integrative mobility
Correct answer: B

17. Which of these statements does not match with the cascade model of impact mobility?
A. A strategic, curriculum-relevant approach to student mobility
B. A stepwise process to incrementally increase the scope of student mobility
C. A practice to actively discourage students from studying overseas
D. A type of university reform to promote issue-driven education
Correct answer: C

18. How do connectionists differ from generalists and specialists?
A. They work issue-based, interactively and collaboratively combining the relevant disciplines
B. They work discipline-based, interactively and collaboratively bridging between local and global governance
C. They work issue-based, interactively and collaboratively bridging between local and global governance
D. They work discipline-based, interactively and collaboratively impeding the relevant issues
Correct answer: A

19. Which one of these is not one of the three Rs principles on animal research?
A. Reduction
B. Refinement
C. Replacement
D. Responsibility
Correct answer: D

20. What does One Health mean?
A. The integrated health concern for humans, animals, and the environment.
B. The integrated health concern for law, ethics, and practice.
C. The integrated health concern for entire families.
D. The integrated health concern for entire countries.

Correct answer: A

21. Which of the following best captures the role of the Estates & Sustainability Committee (ESC) at the University of Glasgow?
A. To design sustainability content for undergraduate curricula.
B. To approve all research grants that have an environmental component.
C. To oversee the Estate Strategy and Sustainability Strategy, scrutinise major capital investments, and monitor related risks on behalf of Court.
D. To manage day-to-day energy use in individual buildings.
Correct answer: C

22. The Carbon Management Plan (CMP) primarily serves which function in UofG's climate governance?
A. It replaces the need for any formal climate strategy, making Glasgow Green redundant.
B. It sets out a quantified baseline and pathway for greenhouse gas emissions, including interim and 2030/31 targets, underpinning the net-zero commitment.
C. It is a communication plan focused only on student engagement and social media.
D. It is a generic UK sector document with no specific data on UofG's emissions.
Correct answer: B

23. Which of the following is an example of a Scope 3 emission for the University of Glasgow?
A. Gas used to heat a University-owned building.
B. Electricity purchased for lighting lecture theatres.
C. Business travel and commuting by staff and students.
D. Direct fuel use in a University-owned vehicle fleet only.
Correct answer: C

24 What is the primary purpose of the Estates Sustainability Programme Board (ESPB)?
A. To rank universities globally on sustainability performance.
B. To develop and oversee a portfolio of decarbonisation projects for the estate, using tools like "cost per tonne of carbon saved" and aligning these with the capital plan.
C. To administer student bursaries for sustainability-related field trips.
D. To negotiate international research partnerships unrelated to climate.
Correct answer: B

25. Why is the Centre for Sustainable Solutions (CfSS) considered a critical part of UofG's sustainability governance architecture?

A. Because it replaces all central governance bodies and makes Court and ESC unnecessary.
B. Because it operates solely as a financial unit that offsets all of the University's emissions.
C. Because it acts as a bridge between governance, research, teaching and civic engagement, helping to embed sustainability across the institution and into city partnerships.
D. Because it is responsible for maintaining campus grounds and recycling facilities.
Correct answer: C

26.. According to the IPCC, what are the three key components of risk:
A. Hazard, Vulnerability, Coping capacity
B. Vulnerability, Hazard, Exposure
C. Exposure, Sensitivity, Resilience
D. Resilience, Hazard, Exposure
Correct answer: B

27. Nature-based solutions…
A. Target biodiversity restoration only
B. Focus only on natural ecosystems
C. Address social, economic, and environmental challenges
D. Are mainly relevant for coastal zone management
Correct answer: C

28. Ecosystem services…
Can help in addressing all the dimensions of risks from natural hazards
A. Are not relevant in terms of climate change mitigation
B. Are not relevant in terms of climate change adaptation
C. Are not relevant in terms of disaster risk reduction
Correct answer:
As the correct option was mistakenly included in the question text, 2 points are awarded to all students
(original option A: "Can help in addressing all the dimensions of risks from natural hazards").

29. Nature based solutions should:
A. Preferably be applied at a landscape scale
B. Preferably be based on scientific knowledge only
C. Preferably focus on profitability
D. Preferably be designed by experts only
Correct answer: A

30. Nature based-solutions…
A. Are always capable of reducing risks on their own to society's target levels
B. Are a solution to all societal challenges
C. Do not need to be evaluated for potential harm
D. Can be combined with other strategies to reduce risks to society's target levels
Correct answer: D

31. According to the presentation, why are conventional education models insufficient for addressing sustainability challenges?
A. They prioritise vocational skills over academic knowledge
B. They focus on knowledge acquisition without enabling behaviour or systems change
C. They lack alignment with the Sustainable Development Goals
D. They emphasise environmental issues at the expense of social ones
Correct answer: B

32. Which UNESCO competency is defined as the 'ability to deal with uncertainties and evaluate multiple futures'?
A. Anticipatory (Foresight) Competence
B. Normative Competence
C. Systems Thinking
D. Strategic Competence
Correct answer: A

33. How does the presentation differentiate between the Sustainable Development Goals (SDGs) and Education for Sustainable Development (ESD)?
A. SDGs are for governments, while ESD is for schools.
B. SDGs provide the 'what', whereas ESD provides the 'how'.
C. SDGs focus on science, while ESD focuses on social studies.
D. There is no difference; they are interchangeable terms.
Correct answer: B

34. What is the 'Multiplier Effect' in the context of Initial Teacher Education (ITE)?
A. The use of multiple media formats to teach the SDGs.
B. The belief that teaching one student leads to teaching their entire family.
C. The idea that sustainability should be taught multiple times a day.
D. The impact of training one teacher who then reaches thousands of future learners.
Correct answer: D

35. Why are anticipatory and strategic competencies identified as 'missing' in many education systems?
A. They are too advanced for primary-aged learners
B. They conflict with evidence-based teaching approaches
C. They require future-oriented thinking and action that curricula often neglect
D. They focus on personal values rather than measurable outcomes
Correct answer: C

36. Which statement best captures what is meant by the myth of weightless technology in relation to AI?
A. AI systems require minimal physical infrastructure once deployed
B. Digital technologies are environmentally neutral compared to industrial systems
C. AI appears immaterial to users, but relies on energy-, water-, and mineral-intensive physical systems
D. Cloud computing eliminates the need for local hardware
Correct answer: C

37. Which distinction between AI training and inference is most accurate?
A. Training occurs once, while inference has negligible environmental impact
B. Training is resource-intensive, while inference scales impacts through repeated everyday use
C. Inference requires more minerals than training
D. Training only affects electricity use, not water consumption
Correct answer: B

38. Which response to overtourism is best described as "reactive" rather than "preventive"?
A. Predictive modelling of visitor flows
B. Expansion of parking facilities after congestion occurs
C. Digital nudging to alternative locations
D. Real-time monitoring of congestion
Correct answer: B

39. What is the primary purpose of real-time visitor monitoring in smart tourism management?
A. Increasing tourist spending
B. Marketing destinations more aggressively
C. Anticipating and managing congestion dynamically
D. Replacing traditional planning systems
Correct answer: C

40. What distinguishes overtourism in the Isle of Skye from urban overtourism cases such as Edinburgh?
A. Overreliance on cruise tourism
B. High-density public transport networks
C. Limited infrastructure relative to visitor numbers
D. High-rise tourism development
Correct answer: C

41. Which definition best captures the concept of overtourism?
A. Tourism growth that benefits all stakeholders equally
B. Excessive visitor numbers that negatively affect residents, visitors, or heritage assets
C. Tourism activity occurring only during peak seasons
D. Tourism development in urban destinations only
Correct answer: B

42. Which indicator is most commonly used to identify overtourism in destinations?
A. Total national tourism revenue
B. Visitor satisfaction surveys only
C. Visitor density relative to resident population and space
D. Number of tourism marketing campaigns
Correct answer: C

43. What does Scotland's legally binding net zero target aim to achieve?
A. Zero economic growth by 2045
B. A complete ban on tourism activities.
C. A balance between greenhouse gas emissions and removals by 2045
D. The elimination of all emissions by 2030
Correct answer: C

44. Why is tourism considered a major challenge for achieving net zero in Scotland?
A. Tourism uses fewer resources than other sectors
B. Tourism relies heavily on long-distance and car-based travel
C. Tourism is not covered by climate policy
D. Tourism emissions come mainly from food waste
Correct answer: B

45. Which statement best explains the relationship between decarbonisation and net zero?
A. Decarbonisation replaces the need for net zero targets
B. Net zero can be achieved without reducing emissions
C. Decarbonisation reduces emissions at source and is essential to achieving net zero
D. Decarbonisation only applies to industrial sectors
Correct answer: C

46. Which policy principle is most relevant to achieving net zero tourism in Scotland?
A. Maximising visitor numbers
B. Prioritising emissions reduction before offsetting
C. Focusing only on accommodation standards
D. Shifting emissions responsibility to tourists
Correct answer: B

47. What is a key lesson from Scotland's net zero approach for students and travellers?
A. Sustainable tourism requires stopping travel entirely
B. Individual choices have little impact on emissions
C. Travel behaviour influences carbon outcomes
D. Net zero is only a government responsibility
Correct answer: C

48. Which statement best reflects how sustainable heritage management is conceptualised in the Scottish context presented in the lecture?
A. It prioritises environmental conservation, with social and cultural concerns treated as secondary.
B. It focuses on maximising tourism revenue to fund conservation activities.
C. It integrates environmental protection with social equity, cultural identity, and community wellbeing.
D. It is primarily a response to UNESCO World Heritage Site inscription requirements.
Correct answer: C
Rationale: The lecture emphasises that sustainability in Scotland is not only environmental but also social and cultural, aligning with national strategies and the UN Sustainable Development Goals.

49. According to the lecture, which of the following is a key risk associated with UNESCO World Heritage Site (WHS) inscription?
A. Loss of national sovereignty over heritage sites
B. Overconcentration of investment and attention on designated sites at the expense of wider regional heritage

C. Declining visitor numbers due to restrictive conservation regulations
D. Reduced community engagement as management is transferred to UNESCO
Correct answer: B
Rationale: While WHS status brings visibility and branding benefits, the lecture highlights risks such as marginalising non-designated heritage assets and increasing management pressures.

50. Based on the Glasgow European Capital of Culture (1990) case study, which outcome is most widely regarded as its most enduring legacy?
A. A permanent resolution of poverty and social inequality
B. Sustained increases in manufacturing employment
C. Transformation of Glasgow's international image and urban identity
D. Long-term reduction in housing costs through regeneration
Correct answer: C
Rationale: Research cited (Garcia, 2005) identifies image and identity transformation as the most lasting impact, despite persistent socio-economic inequalities.

51. Which argument best explains why Community-Led Tourism is presented as a promising model for sustainable heritage management in Scotland?
A. It replaces national tourism strategies with entirely local control.
B. It guarantees economic growth while eliminating environmental impacts.
C. It rebalances governance by enabling meaningful community participation in decision-making.
D. It is primarily designed to reduce international visitor numbers.
Correct answer: C
Rationale: CLT is framed as a governance shift away from top-down models toward collaborative, community-empowering approaches that support more equitable and resilient outcomes.

52. How does the lecture conceptualise the relationship between climate change and tourism in natural heritage destinations?
A. Climate change primarily reduces tourism demand, lowering environmental pressure on fragile sites.
B. Climate change transforms tourism from a development opportunity into a source of environmental and economic risk.
C. Tourism is largely unaffected by climate change due to technological adaptation.
D. Climate change affects only coastal and marine tourism, not terrestrial sites.
Correct answer: B
Rationale: The lecture emphasises tourism's dual role: it contributes to climate change through emissions while simultaneously becoming more vulnerable to climate impacts, especially in nature-based destinations.

53. Which argument best captures the lecture's critique of sustainable tourism as a policy concept?
A. Sustainable tourism fails because it ignores social and cultural dimensions.
B. Sustainable tourism is universally effective but poorly communicated.
C. Sustainable tourism has become diluted, contested, and inconsistently applied, limiting its practical effectiveness.
D. Sustainable tourism is incompatible with tourism in protected areas.
Correct answer: C
Rationale: The lecture highlights conceptual ambiguity, greenwashing, and conflicting interpretations of sustainability, undermining its role as a coherent policy and management framework.

54. Why is overtourism particularly problematic in natural heritage destinations compared to urban settings?
A. Natural areas receive more visitors than cities.
B. Environmental degradation directly undermines the core attraction of natural destinations.
C. Natural destinations lack any economic benefits from tourism.
D. Visitor congestion is more socially disruptive in rural areas.
Correct answer: B
Rationale: Unlike cities, where density can enhance vibrancy, natural destinations depend on perceptions of remoteness and ecological integrity, making them highly sensitive to visitor pressure.

55. Why is St Kilda presented as representing the outer boundary of sustainable tourism?
A. It relies entirely on mass tourism for conservation funding.
B. Its remoteness naturally limits visitor numbers without management intervention.
C. Sustainability is achieved through strict restriction and exclusion rather than mitigation or dispersal.
D. It demonstrates that tourism growth and conservation are always incompatible.
Correct answer: C
Rationale: St Kilda exemplifies a precautionary model where sustainability depends on limiting access, recognising that some sites cannot absorb increased tourism without irreversible damage.

56. What risks are increasing in East Asia due to global warming?
I. Landslides II. Flooding III. Wind damage IV. Insect
A. I, II & III
B. III & IV

C. None of the above
D. All the above
Correct answer: A

57. The 1992 Statement of Forest Principles defined sustainable forest management. What kind of sustainable needs are required of forests?
I. Cultural needs II. Economic needs III. Ecological needs IV. Social needs
A. I, II & IV
B. III & IV
C. None of the above
D. All the above
Correct answer: D

58. What is Taiwan's timber self-sufficiency rate? Select the applicable item.
A. less than 1%
B. 1% or more but less than 5%
C. 50% or more
D. 100%
Correct answer: B

59. Through the case study of Asakura City, what do you think is necessary to build a resilient local community that can withstand disasters?
I. Regular evacuation drills II. Intergenerational communication III. Government support IV. Women's participation
A. I & II
B. III & IV
C. None of the above
D. All the above
Correct answer: D

60. Select the characteristics and background of '自伐林業'(Zibatsu forestry) gaining attention in Japan?
A.Employment work
B. Soil Conservation
C. Narrow forest roads
D. Self-logging
Correct answer: A