

Geography 12

August 2005 Provincial Examination

ANSWER KEY / SCORING GUIDE

- Curriculum Organizer:**
1. The Nature of Geography
 2. Systems of the Earth
 3. Resources of the Earth

Part A: Multiple Choice

Q	K	C	S	CO	PLO	Q	K	C	S	CO	PLO
1.	B	U	1	2	2A1	28.	B	U	1	2	2C1a
2.	D	U	1	2	2A2	29.	A	U	1	2	2D1
3.	D	K	1	2	2A1	30.	A	K	1	2	2D1
4.	A	K	1	2	2A3	31.	D	U	1	2	2D1
5.	C	K	1	1	1B2, 2A2	32.	C	U	1	2	2D3b
6.	A	U	1	2	2B1	33.	B	U	1	2	2D3a
7.	C	U	1	2	2A2	34.	A	U	1	2	2D3b
8.	A	U	1	1	1C2, 2A3	35.	D	U	1	2	2D3b
9.	B	U	1	1	1C2, 2A3	36.	A	U	1	2	2D3c
10.	C	U	1	1	1C2, 2A3	37.	C	U	1	2	2D3c
11.	D	U	1	1	1C2, 2A3	38.	B	U	1	2	2D3d
12.	D	U	1	2	2B1	39.	C	U	1	1	1B2
13.	B	U	1	2	2B2	40.	C	U	1	2	2D3e
14.	A	U	1	2	2B2	41.	A	U	1	1	1A1, 2D1
15.	D	U	1	2	2B3	42.	B	U	1	3	3B1
16.	A	U	1	2	2B3	43.	A	U	1	3	3A1
17.	C	U	1	2	2B3	44.	B	K	1	3	3C1
18.	A	U	1	1	1C3, 2A4	45.	A	U	1	3	3C1, 3A2, 2B5
19.	D	U	1	2	2C1a	46.	B	U	1	1	1C1
20.	B	U	1	2	2C1d	47.	D	U	1	1	1C1
21.	D	U	1	2	2C1d	48.	C	U	1	2	2D3b
22.	C	U	1	2	2C1e	49.	D	U	1	2	2D3b
23.	D	U	1	2	2C1b	50.	C	U	1	1	1B3
24.	B	U	1	2	2C1b	51.	D	U	1	1	1C2
25.	C	U	1	2	2C1b	52.	C	U	1	2	2D3e
26.	C	U	1	2	2C1c	53.	D	U	1	2	2B3
27.	A	U	1	2	2C3						

Multiple Choice = 53 marks

Part B: Written Response

Q	C	S	CO	PLO
1.	U	4	2	2D4, 1B4, 3B2
2.	H	6	2	2D4, 1B4, 3B2
3.	H	6	1	1B4
4.	H	6	3	3C1, 3B2, 2B4
5.	H	15	3	3C1, 3C4

Written Response = 37 marks

Multiple Choice = 53 (53 questions)

Written Response = 37 (5 questions)

EXAMINATION TOTAL = 90 marks

LEGEND:

Q = Question Number

C = Cognitive Level

CO = Curriculum Organizer

K = Keyed Response

S = Score

PLO = Prescribed Learning Outcome

PART B: WRITTEN RESPONSE

Value: 37 marks

Suggested Time: 65 minutes

INSTRUCTIONS: Answer each question in the space provided. You may not need all of the space provided. Answers should be written in **ink**. **Comprehensive answers are required for full marks.**

Use the Topographic Map and Air Photograph on detachable pages 27 and 29 to answer questions 1 and 2.

1. **Explain** four ways that the physical environment has influenced the people of Lethbridge. **(4 marks)**

Response:

Effects of Physical Geography	<ul style="list-style-type: none">• prairie region of southern Alberta — dry continental climate• excellent chernozem soils allowed the extensive agricultural development• due to lack of moisture, dry land farming and ranching are practiced• settlement pattern is dispersed (typical of farming and ranching communities)• town developed on the plateau, above the river and away from the flood plain — due to extensive gullying resulting from flash flooding• meandering river and narrow flood plain meant no settlement on the flood plain• river has a control dam on it to reduce the effects of flooding in the spring; dikes have been constructed along the river to prevent flooding• incised meander likely due to isostatic rebound — restricted transportation• seasonal precipitation is stored in dugouts for the dry season• landscape was shaped by glacial erosion and deposition as evident by the knob and kettle topography (flat land for farming)• east-west movement of people was hindered by the river, therefore bridges have been constructed to span the river• the citizens of this city are affected by the cold and severe winter conditions in their housing, heating, clothing and transportation costs• several arenas have been constructed to provide recreation for the citizens in such a cold climate• dugouts for recreational opportunities (swimming and hockey)• intermittent lakes restrict urban development and freshwater sources (leading to water diversion programs)• the river is used for transportation and recreation
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2. **Assess** how human activity has affected the environment of the Lethbridge region.

Answer in **paragraph** form.

(6 marks)

Response:

Human Impacts	<ul style="list-style-type: none">• The sewage from the city is collected on the flood plain, treated and released into the river, thus affecting the ecology of the river.• Urban run-off from the streets, parking lots and lawns of the city drain into the river, thereby contaminating the river.• Run-off from the streets is laden with salts from road maintenance as this region has snow for several months of the year.• Agricultural run-off drains into the streams and groundwater and eventually into the river.• People have controlled the flow of the river, thereby influencing the ecology of the river.• Golf course is on the flood plain; fertilizers and chemicals used in this industry drain into the water supply.• Rivers and streams are being diverted for agricultural purposes, thereby reducing the flow in these bodies of water and losing water to evaporation as they appear to be open canals.• Urbanization is reducing habitat for native species such as antelope and burrowing owls.• Development of the areas has resulted in a loss of prairie soils.• Transportation systems have been designed for the convenience of the people; however, this industry can affect air quality.• Leachates from the landfill site, located on the edge of a coulee, drain into the river.• Energy needs require the building of pipelines (fossil fuels), increasing greenhouse gasses and habitat destruction.• Laser leveling of the land for agricultural purposes.
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3. **Outline** two environmental, two economic and two social consequences often associated with drought conditions.

(6 marks)

Response:

<p>Environmental Consequences</p>	<ul style="list-style-type: none"> • Reduced precipitation rates will force farmers to alter their agricultural practices (a wider adoption of dry land farming techniques), as well as exploring the use of more drought resistant varieties of crop seeds. • Flora and fauna habitat will be seriously compromised and may result in the migration or total loss of certain species. • Drought conditions result in alterations to the food chain as species move out or are eliminated (potential invader species). • Where possible, water will need to be diverted to drought-stricken regions. • Even dramatic changes to the human and natural factors that contribute to climate change may not reverse certain alterations (loss of biodiversity). • Dust bowl conditions, loss of topsoil. • Effect to gene pool, “bug booms.” • Extensive agricultural practices will have resulted in the loss of natural vegetation and possibly soil erosion.
<p>Economic Consequences</p>	<ul style="list-style-type: none"> • Droughts result in a significant reduction in agricultural output — this directly impacts the economic earnings of farmers. <ul style="list-style-type: none"> – Prolonged periods of drought could potentially force farmers to abandon agricultural production entirely to seek other forms of employment. – Crop insurance premiums will increase. • A significant reduction in domestic agricultural production may force countries to rely on the importation of foodstuffs (cost increases). <ul style="list-style-type: none"> – Famine, caused by prolonged periods of drought, could trigger massive social and economic upheaval. • Foreign debt loads may increase as countries are forced to borrow large sums of money to prop up their economies. • Impact on spin-off industries (value added industries). • Need to employ costly water conservation methods (possibly build reservoirs and pipelines from water surplus regions).

Social Consequences	<ul style="list-style-type: none">• Environmental refugees as migration increases stress on destination regions.• Death, high infant mortality rates.• Civil conflicts and unrest, political instability.• Involvement of non-governmental organizations (NGOs) and governmental organizations.• International media attention results in increased public awareness and social action in donor nations.• Women in less developed countries are forced to search further afield for food and water.• Proliferation of hunger and hunger-related diseases.
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4. **Explain** how climate change may affect each of the following industries.

(6 marks)

Response:

<p>Forestry</p>	<ul style="list-style-type: none"> • longer growing seasons • decrease in water budget • soil stability problems — erosion • change in harvesting seasons • change in pest and disease regimes • change in forest fire frequency and intensity • change in timberline • change in species of trees harvested — indigenous species die off (invader species) • job loss or job creation depending on location • the immune systems of trees are compromised by acidity of soil and are susceptible to disease • microcosmic fungi killed off due to acid precipitation
<p>Fishing</p>	<ul style="list-style-type: none"> • temperature change in lakes and oceans • aquatic weed growth • species shift — salmon replaced with less “expensive” fish such as carp • fish abundance changes • change in aquatic food chain (invader species) • longer growing seasons • increased eutrophication • river and stream flow changes • longer low flow periods • delayed spawning, early migration downstream • increased sediment and turbidity • potential job losses, decreased tax revenue • increased need for government assistance • acidity of water due to acid precipitation can alter food web • UV alters phytoplankton lifecycle • needs for aquaculture • salmon taxis

Tourism	<ul style="list-style-type: none">• drier/wetter areas (nature of place changes)• unpredictable/extreme winter leads to anxiety• industry related tourism (wine grapes)• job loss, decreased tax revenue and incomes• species changes• cost increased to develop strategies to deal with change (dikes around resorts for flood control)• spin-off industries are affected• bug/disease increase (pine beetle)• sporting events, concerts may lose venues• seasonal change (less/more) demand for alternate locations• transportation (milder winters allow for more road travel and reduces pollution associated with snow removal)
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Use the case study *Managing Ecuador's Resources* on pages 36 and 37 to answer question 5.

5. Using the data provided and your understanding of geography:

- **Describe** Ecuador's natural and physical characteristics.
- **Assess** the impacts associated with the exploitation of Ecuador's natural resources.
- **Suggest** reasons why the government of Ecuador faces significant challenges in trying to balance the use of its natural resources with the protection of its environment.

Response:

<p>Ecuador's Physical and Natural Characteristics</p>	<ul style="list-style-type: none"> • Ecuador is a country of contrasts in terms of its topography and landscape, as well as its climate. <ul style="list-style-type: none"> – The subduction of the Nazca and the South American plates has resulted in the creation of a landscape that is dominated by a young fold mountain system and composite cone volcanoes. Both of these factors ensure that Ecuador's soils are fertile and that its mountains are rich in sedimentary and mineral deposits (volcanism). – There is a steep rise in elevation from its coastal communities (Guayaquil at sea level) to those high in the Andes mountains (Quito at 3000 metres). – The climates of this region vary significantly despite the location at the equator. Because it is at sea level, Guayaquil experiences a climate typical of most equatorial locations — constant warm temperatures and humid conditions. Located high in the Andes (3000 m), Quito has more of an alpine climate. • In terms of biodiversity, Ecuador's rainforests contain nearly 10% of the world's known plant and animal species. • Although a large portion of Ecuador is covered in lush tropical rainforests (56%) — only 6% of its lands are arable. • Ecuadorians are able to take advantage of topography and climate to grow a variety of high-yielding plantation crops (coffee and bananas). • Being within the tropics, Ecuador has a vast array of hardwood species of trees that are highly sought after, both within Ecuador and around the world.
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Impacts Associated with the Exploitation of Ecuador's Natural Resources

- Large-scale agricultural production, as well as any major industrial activity will have a significant impact on animal habitat and the potential loss of biodiversity as forests are cleared and supporting infrastructures are readied. Considering that Ecuador's forests house nearly 10% of the world's known species of plants and animals, the impacts could be irreversible.
- The use of chemical fertilizers and pesticides in the cultivation of plantation crops will impact water quality, as these agricultural by-products will leach into surface and subsurface waters.
- Agricultural leachates will also impact soil quality.
- The nitrates from chemical fertilizers will increase the potential for eutrophication.
- The contamination of soils and water sources threaten fish, aquatic species, animals, birds and people — habitats and food sources are destroyed and the surrounding ecosystems experience incredible strains.
- Nearly 4.3 million gallons of wastewater from the oil industry reach the tributaries of the Amazon each day.
- The toxification of the environment from water-based and land pollutants increases the probability of biomagnification as these wastewaters contain highly toxic and noxious chemicals (benzene, toluene and xylenes).
- There is point-source pollution as areas beyond Ecuador's borders (the Amazonian basin) are significantly impacted by the oil industry.
- The exploitation of its rich reserves of natural resources may have significant effects on Ecuador's indigenous peoples (alterations in traditional ways of life and cultural practices) as culture clash occurs and traditional ways of life are lost.
- Environmental problems are magnified by the fact that industrializing countries like Ecuador are often having to deal with an aging and inadequate infrastructure. To sustain their current levels of industrial and agricultural output existing roads/transportation and communication arteries will need to be upgraded and expanded.
- Investment from foreign areas are needed for development (have started using the American dollar).
- Concentration of economic resources in high financially yielding economies (oil versus bananas).

<p>Challenges in Balancing the Use and Protection of the Ecuadorian Environment</p>	<ul style="list-style-type: none"> • There are numerous problems associated with the move from an agricultural based economy to an industrial based economy — 65% of Ecuador’s economy now lies outside of the agricultural sector. <ul style="list-style-type: none"> – Reliance on foreign capital and technological expertise for investment and development purposes perpetuates the notion of “dependency.” – There is a sudden rise in the expectations for expanded goods and services by those within the country — the push to globalize may potentially threaten traditional ways of life. – Fluctuations in the global demand for products can have significant economic effects on the country’s economy. – Despite being rich in natural resources, in its push to industrialize, Ecuador could be burdened with an incredible monetary debt-load that could trigger hyperinflation and therefore cripple their economy. – Native land-use issues will need to be resolved. • Ecuador will face significant pressure from international non-government organizations (NGOs — Greenpeace) to ensure that the region’s biodiversity is protected and does not fall victim to progress. • Seeing that oil and gas resources are finite and non-renewable, Ecuador will need to diversify its economic activities in order to maintain the standard of living that its citizens have and will come to expect. • Industry versus ecology; short-term versus long-term economic gain outweighs long-term sustainability of the resources available. • Resource management, especially of a non-renewable resource.
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SCORING GUIDE FOR THE CASE STUDY

<p>The 5 Response:</p>	<ul style="list-style-type: none"> • Thesis is clear, relevant and valid with references to the topic throughout. • Excellent interpretation of the data, which demonstrates a broad understanding of the concepts of geography. • Precise selection of supporting detail and where assessment is required, insightful analysis is provided. • Expression is clear and fluent.
<p>The 4 Response:</p>	<ul style="list-style-type: none"> • Thesis is evident and the topic is addressed throughout. • Interpretation of the data is proficient with a sound understanding of geographic concepts. • Appropriate selection of supporting detail with some analysis. • Expression is clear and fluent.
<p>The 3 Response:</p>	<ul style="list-style-type: none"> • Thesis is attempted but may be unclear or ambiguous. • Repetition of data with organization and planning but limited interpretation and adequate understanding of geographic concepts. • Expression is satisfactory.
<p>The 2 Response:</p>	<ul style="list-style-type: none"> • Thesis is unfocused and the writer is off topic. • Limited or no interpretation of data with a flawed understanding of geographic concepts. • Expression is awkward and simplistic.
<p>The 1 Response:</p>	<ul style="list-style-type: none"> • No attempt at a thesis. • Data used incorrectly or not at all in demonstrating little or no understanding of geography.
<p>The 0 Response:</p>	<ul style="list-style-type: none"> • While writing is evident, no discernible attempt has been made to address the topic.
<p>The NR Response:</p>	<ul style="list-style-type: none"> • A blank paper with no response given.

END OF KEY