

Geography 12

August 2003 Provincial Examination

ANSWER KEY / SCORING GUIDE

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

Part A: Multiple Choice

| Q | K | S | C | T | PLO | Q | K | S | C | T | PLO |
|----------|----------|----------|----------|----------|------------|----------|----------|----------|----------|----------|------------|
| 1. | B | 1 | K | 3 | 3A1 | 21. | A | 1 | U | 2 | 2C1a |
| 2. | A | 1 | K | 3 | 3A1 | 22. | C | 1 | U | 2 | 2C1a |
| 3. | B | 1 | K | 3 | 3B2 | 23. | C | 1 | K | 2 | 2C1d |
| 4. | B | 1 | K | 1 | 1A1 | 24. | C | 1 | U | 2 | 2C1c |
| 5. | C | 1 | K | 2 | 2B5 | 25. | D | 1 | U | 2 | 2C1b |
| 6. | A | 1 | U | 2 | 2A2 | 26. | B | 1 | U | 2 | 2C3 |
| 7. | A | 1 | U | 2 | 2B1 | 27. | D | 1 | U | 2 | 2C2, 2C1b |
| 8. | C | 1 | U | 2 | 2A3 | 28. | D | 1 | U | 2 | 2D1 |
| 9. | D | 1 | U | 1 | 1A2 | 29. | D | 1 | U | 2 | 2D3a, 2D1 |
| 10. | C | 1 | U | 2 | 2A3 | 30. | C | 1 | U | 2 | 2D3b |
| 11. | D | 1 | U | 1 | 1C2 | 31. | B | 1 | U | 2 | 2D3b |
| 12. | B | 1 | U | 1 | 1C2 | 32. | B | 1 | U | 2 | 2D3c |
| 13. | B | 1 | U | 2 | 2A1 | 33. | A | 1 | U | 2 | 2D3c |
| 14. | D | 1 | U | 2 | 2A2 | 34. | D | 1 | K | 2 | 2D3e |
| 15. | B | 1 | U | 2 | 2B1 | 35. | C | 1 | U | 1 | 1C1 |
| 16. | D | 1 | U | 2 | 2B3 | 36. | C | 1 | U | 1 | 1C1 |
| 17. | B | 1 | U | 2 | 2B2, 2B3 | 37. | B | 1 | U | 1 | 1C1 |
| 18. | A | 1 | U | 2 | 2B4 | 38. | A | 1 | U | 2 | 2D3d |
| 19. | C | 1 | U | 2 | 2B3 | 39. | B | 1 | U | 1 | 1C2 |
| 20. | B | 1 | K | 1 | 1B1 | 40. | A | 1 | U | 1 | 1B3 |

Multiple Choice = 40 marks

Part B: Written Response

| Q | B | C | S | T | PLO |
|----------|----------|----------|----------|----------|------------|
| 1. | 1 | H | 6 | 1 | 1A1, 1B4 |
| 2. | 2 | U | 4 | 2 | 2C1a |
| 3. | 3 | H | 5 | 2 | 2B5, 3B2 |
| 4. | 4 | U | 6 | 3 | 3A4 |
| 5. | 5 | U | 3 | 2 | 2B3 |
| 6. | 6 | H | 6 | 3 | 3C1 |
| 7. | 7 | U | 4 | 1 | 1B4 |
| 8. | 8 | H | 3 | 3 | 3A4 |
| 9. | 9 | H | 3 | 1 | 1B3 |
| 10. | 10 | H | 10 | 3 | 3C4 |

Written Response = 50 marks

Multiple Choice = 40 (40 questions)

Written Response = 50 (10 questions)

EXAMINATION TOTAL = 90 marks

LEGEND:

Q = Question Number

C = Cognitive Level

T = Topic

K = Keyed Response

S = Score

PLO = Prescribed Learning Outcome

B = Score Box Number

PART B: WRITTEN RESPONSE

Value: 50 marks

Suggested Time: 80 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 air photograph on page 21 and the topographic map on page 23 to answer question 1.

1. **Explain** how the physical and human characteristics of the Waterton Lakes National Park have influenced land use. Answer in **paragraph** form. **(6 marks)**

Response:

| | |
|---------------------------------|--|
| Physical Characteristics | <ul style="list-style-type: none">• Waterton Lakes National Park was established due to its unique characteristics• picturesque scenery attracts tourists• rugged, isolated mountain region of southern Alberta• sedimentary mountain range was once the bottom of an ancient sea bed• compression of sediments resulted in folded mountains• glacial action has shaped the mountains leaving hanging valleys, arêtes, pyramidal peaks, and tarns• young streams continue the work of erosion, waterfalls and rapids• finger/ribbon lakes and tarns have formed in the depressions carved out by the glaciers• boreal forest and alpine meadows are the dominant vegetation in area• narrow, steep-sided valleys• climatic conditions• remote, pristine wilderness containing abundant wildlife |
|---------------------------------|--|

| | |
|--|---|
| Human Characteristics | <ul style="list-style-type: none">• some trails leading into the remote camps• restricted access to the region is from the north and west using Highway 5• development has taken place on the alluvial fans which extend into the lakes: a small townsite and some recreation and cultural activities• development will be limited in the future both because of physical restraints and its park status• evidence suggests that water quality issues are being addressed (presence of the sewage treatment centre)• use by tourists is limited to hiking, camping, boating and golf• increased profile of the park has led to more visitors• traditional First Nations use• marina oil spills affect the ecology of the lake• use of road salt in the winter• use of fertilizers for the golf course |
| Note to Markers: This question to be marked holistically. | |

Select one of the following to answer question 2.
Indicate your selection with a ✓.

Subduction Zone

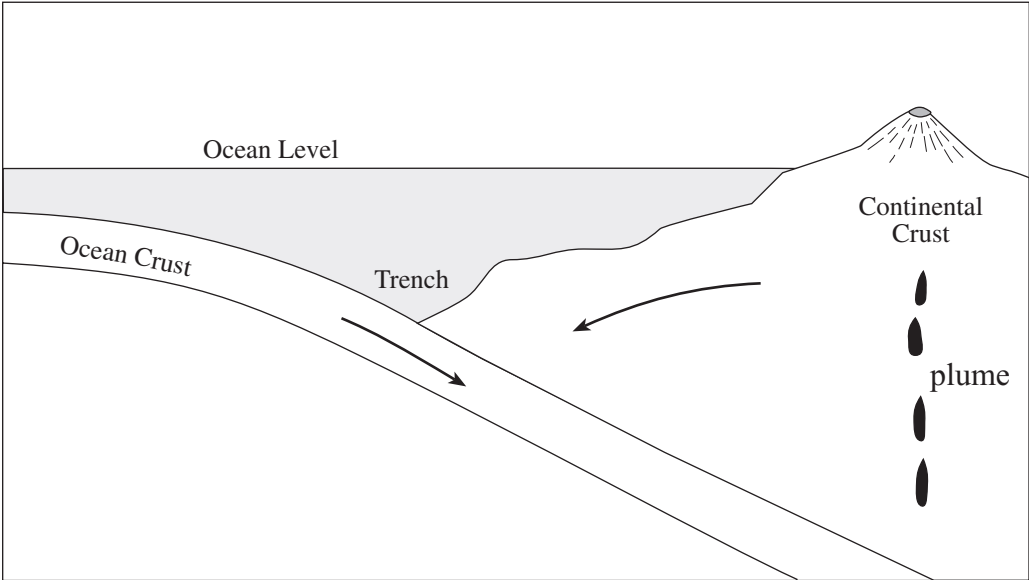
Rift Valley

2. With the aid of a clearly labelled diagram(s), **explain** either the formation of a subduction zone **OR** a rift valley.

(4 marks)

Response:

SUBDUCTION ZONE

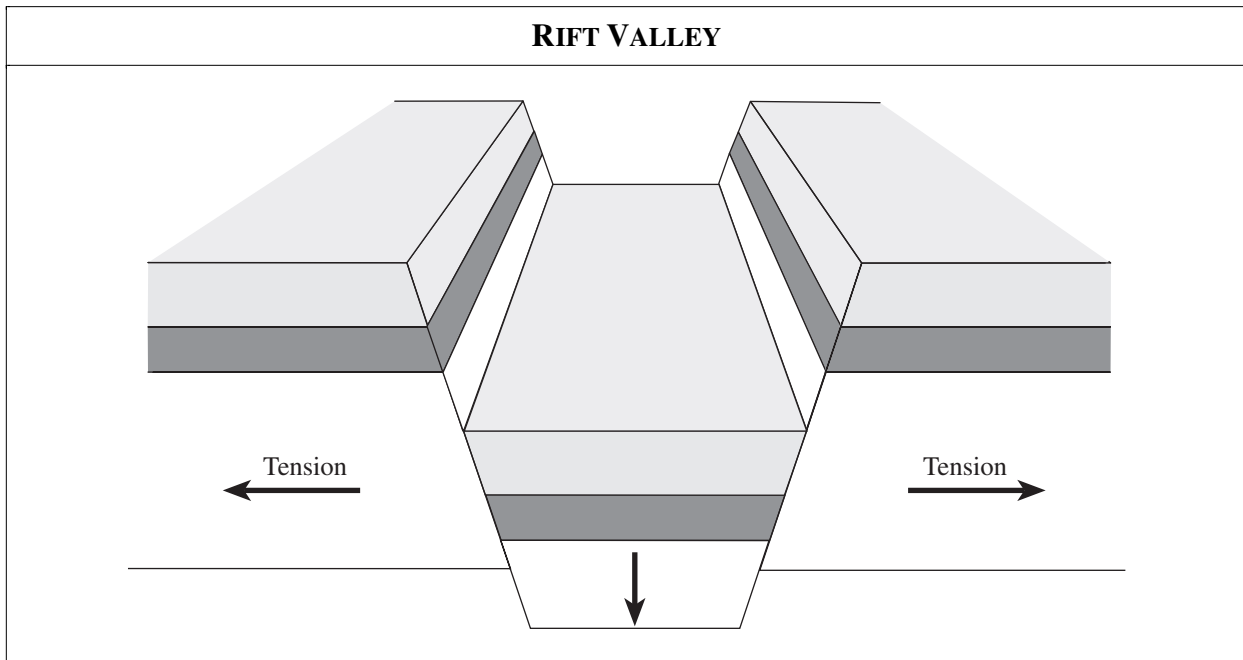


- The zone where an oceanic plate is sinking beneath a plate at a converging plate boundary or an ocean plate under an ocean plate. Convection currents drag the ocean plate into the mesosphere under a continental plate or another oceanic plate forming a trench.

Note to Markers:

This question is to be marked holistically. The explanation may be shown in the diagram. An annotated diagram can achieve full marks.

Response:

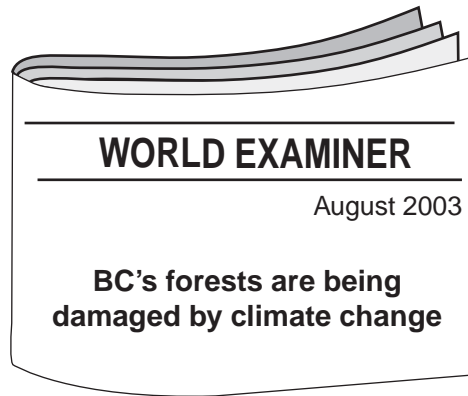


- A steep-sided valley which is formed when a block of the earth's crust slowly slips down between two roughly vertical, parallel fault lines as a result of divergent plate movement.

Note to Markers:

This question is to be marked holistically. The explanation may be shown in the diagram. An annotated diagram can achieve full marks.

Use the following headline to answer question 3.



3. a) **Explain** three ways that climate change is affecting BC's forest activities. **(3 marks)**

Response:

| | |
|---|--|
| <p>The Effect of Climate Change on Forest Activities</p> | <ul style="list-style-type: none">• altered weather patterns increase the possibility of forest fires during the drier summer months and place stress on vegetation due to lack of precipitation• reduction of recreation opportunities due to fire risks• warmer temperatures increase growth rate• forests become vulnerable to infestation when warmer winters inhibit the natural cycle in which cold weather would normally kill off pests and disease (pine beetle)• alters natural die-off processes• biome sizes are altered (reduction in Boreal and increase in Cool Temperate)• reduction in the diversity of biomes• migration of species• El Niño will impact water temperatures, air temperatures and weather patterns• increased storm activity increases the possibility of forest blow-downs• disappearance of glaciers will flood low-lying coastal areas• reduced income, profits and tax revenues |
|---|--|

b) **Suggest** two strategies that could be implemented to help reduce climate change.

(2 marks)

Response:

| | |
|---|---|
| Strategies to Reduce the Effects of Climate Change | <ul style="list-style-type: none">• reduce reliance on fossil fuels by promoting the development and use of non-polluting energy sources• promote afforestation programs and the protection of large tracts of forested areas• support international initiatives such as the Kyoto Accord• improve the efficiency of automobile engines• improve residential heating and insulation procedures (double-glazing of windows)• government incentives/tax breaks• increase research and development of alternative energy sources• promotion of conservation strategies through education• promote alternative transportation methods• reintroduce vehicle testing in order to eliminate polluting emissions |
|---|---|

4. a) **State** two reasons why wetlands are considered a valuable resource.

(2 marks)

Response:

| | |
|--|--|
| <p>Reasons Wetlands Are a Valuable Resource</p> | <ul style="list-style-type: none"> • wildlife and waterfowl habitat • breeding grounds for marine and aquatic life • provide flood control • recharge source for groundwater • natural filter for water • source for irrigation water • aesthetic value • attracting tourists (bird watchers) • research and education opportunities • gradual release of moisture into the atmosphere • a part of the hydrologic cycle • supports a variety of plantlife/vegetation |
|--|--|

b) **Explain** two different threats to wetlands.

(2 marks)

Response:

| | |
|---|---|
| <p>Drying up and loss of recharge sources due to</p> | <ul style="list-style-type: none"> • dam construction. • diversion projects. • irrigation. |
| <p>Reclamation for</p> | <ul style="list-style-type: none"> • residential development. • commercial activities. • recreation facilities (marinas, golf courses). • industry. • landfill sites. • agricultural activities. |
| <p>Contamination from Pollution</p> | <ul style="list-style-type: none"> • thermal pollution • urban run-off • agricultural chemicals • leaching from landfills • industrial waste (settling ponds) • siltation • domestic sewage • acid rain |
| <p>Natural Processes</p> | <ul style="list-style-type: none"> • hurricanes/tornadoes • salt water intrusions • introduction of invader species • global warming leading to rising sea levels • wild fires • drought |

c) **Outline** two ways to protect wetlands.

(2 marks)

Response:

| | |
|---------------------------------|--|
| Ways to Protect Wetlands | <ul style="list-style-type: none">• create strict laws, increase enforcement and levy heavy fines• legislation to protect wetland areas (restriction on marine engines)• increase knowledge of the vital role of wetlands through education• rehabilitation• forested buffer zones• restrictions on industrial, commercial and recreational activities near wetlands• ban on agroicides• restricted access for livestock• reduce access into wetland areas |
|---------------------------------|--|

Use the following photograph to answer question 5.



5. a) **Identify** the natural vegetation associated with the biome represented in the photograph.

(1 mark)

Response:

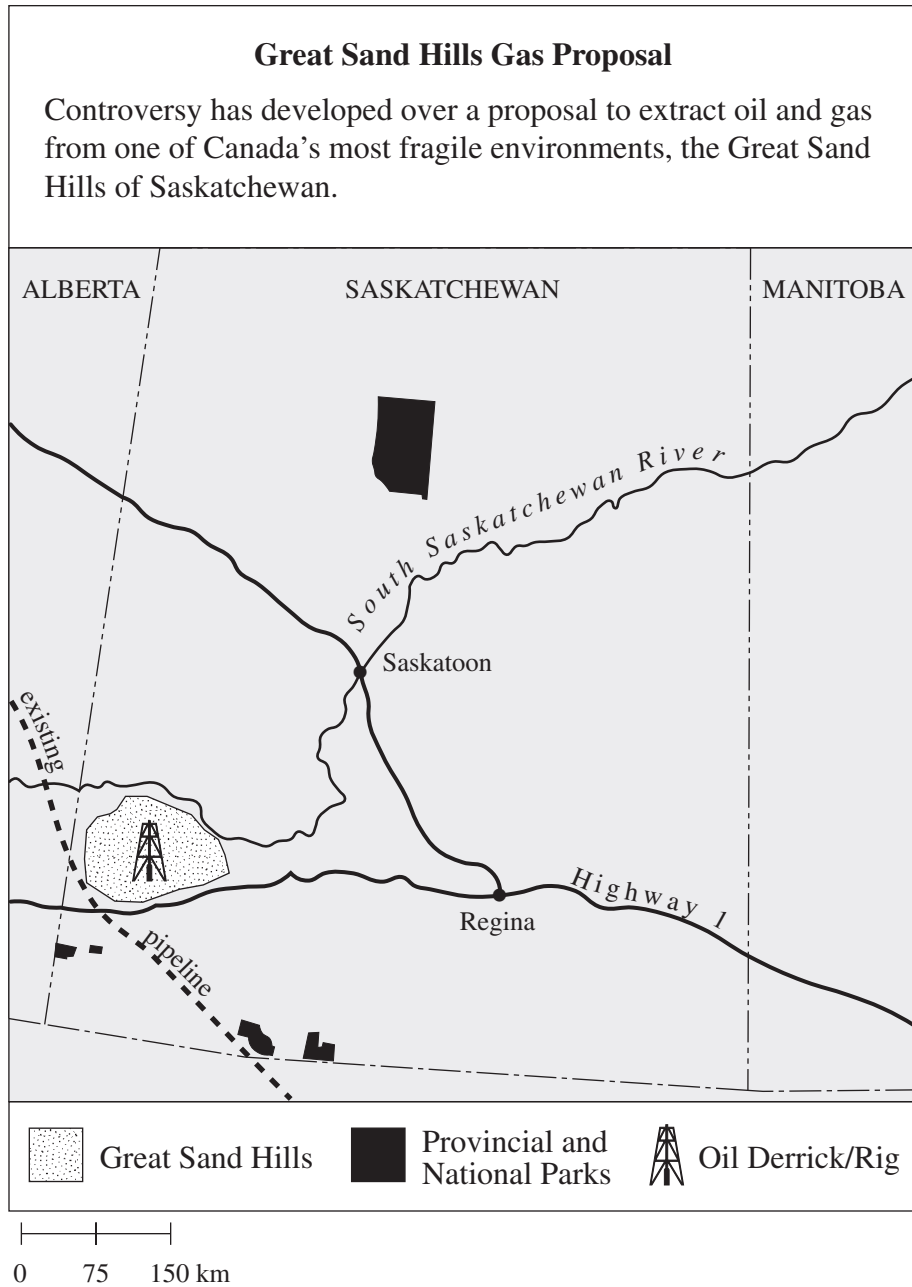
| | |
|---------------------------|---|
| Natural Vegetation | <ul style="list-style-type: none">• desert• cactus• mesquite• xerophytic• Joshua tree |
|---------------------------|---|

b) **Identify** and **explain** how this vegetation has adapted to the climatic conditions of the region. **(2 marks)**

Response:

| | |
|--------------------|--|
| Adaptations | <ul style="list-style-type: none">• deep tap roots to reach groundwater• umbrella-like root structure for water access• shallow roots absorb water before evaporation• cell structure allows storage of water, such as cactus• thickness of bark to reduce transpiration and to protect from heat• thorns and waxy needles reduce transpiration and protection from predators• small leaf size to conserve moisture through reduced transpiration• stunted growth indicates limited moisture for growth |
|--------------------|--|

Use the following map to answer question 6.



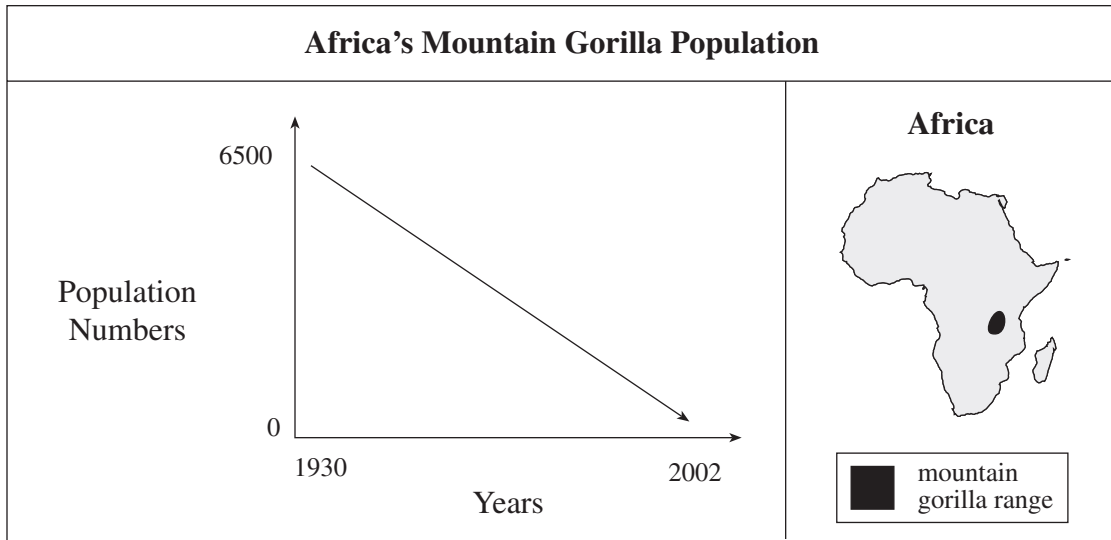
6. **Discuss** three advantages and three disadvantages associated with the Great Sand Hills oil and gas proposal.

(6 marks)

Response:

| | |
|-----------------------------|--|
| <p>Advantages</p> | <ul style="list-style-type: none"> • stimulates the economy <ul style="list-style-type: none"> – creates new jobs (permanent and short-term) – employment opportunities in tertiary/spin-off industries – increase in tax revenues, improved government services – improved standard of living – close to market • increases economic diversity <ul style="list-style-type: none"> – new jobs in petrochemical industry – revitalize the economy • improves trade relationships • post-extraction/production benefits (infrastructure, tourism) • reduces Canada’s dependence on foreign, imported oil • pipelines currently exist, reducing transportation costs |
| <p>Disadvantages</p> | <ul style="list-style-type: none"> • potential loss of a unique ecosystem • landscape destruction <ul style="list-style-type: none"> – wildlife habitat destroyed, disruption of the food chain – conflicts with other land uses (agriculture, tourism) • risks of spills during extraction and transportation <ul style="list-style-type: none"> – potential gas leaks (explosions) • potential pollution <ul style="list-style-type: none"> – groundwater and surface water contamination – air pollution (CO₂ released via burning) • reserves may be over-exaggerated <ul style="list-style-type: none"> – does not encourage conservation or reduce Canada’s reliance on non-renewable energy sources • boom/bust employment (short-term job creation) • proximity to natural park may contaminate a protected environment, possible reduction to tourism |

Use the following data to answer question 7.



7. a) **Describe** two threats to Africa's gorilla population. **(2 marks)**

Response:

| | |
|-----------------------------------|--|
| Habitat Destruction | <ul style="list-style-type: none"> • unsustainable logging (commercial and conversion to plantations) • agricultural expansion • urban development (human migration) • road and highway construction • mining activities • oil exploration • fuelwood collection • climate change • lack of international cooperation • lack of funding to protect habitat |
| Illegal Hunting (Poaching) | <ul style="list-style-type: none"> • gorilla heads, hands and feet are sold as souvenirs • skulls as trophies • bushmeat trade for forestry workers • demand in European delicacy restaurants for bushmeat • non-traditional hunting methods (shotguns instead of spears and snares) increase rate of poaching • big game hunting for sport • poaching — employment opportunity for jobless |

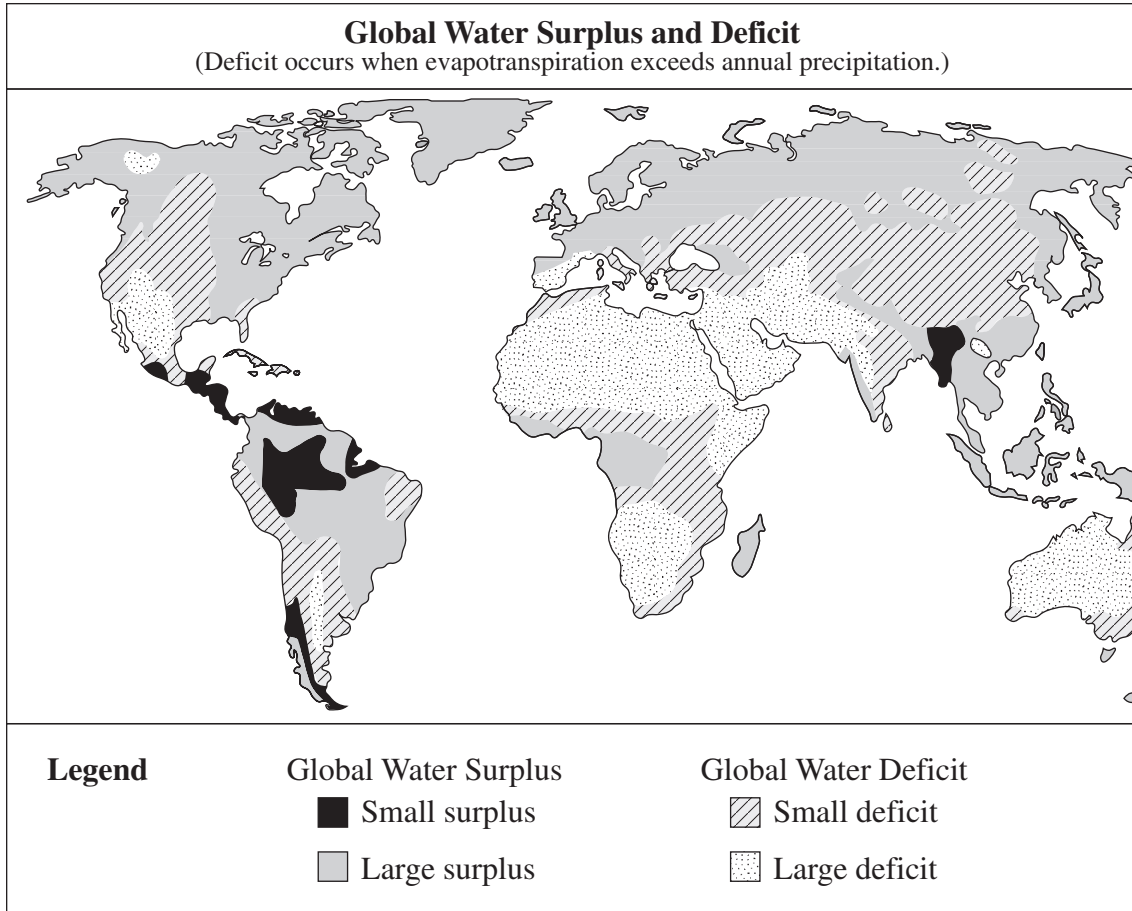
| | |
|-----------------------------------|--|
| Trade in Live Gorillas | <ul style="list-style-type: none"> • household pets • entertainment industry • scientific studies (biomedical research and experimentation) |
| Disease from Human Contact | <ul style="list-style-type: none"> • increased tourism to wildlife reserves threaten gorillas since they have no immunity to human conditions like influenza |
| Medicine | <ul style="list-style-type: none"> • primate parts are used in traditional medical cures |
| Civil Unrest | <ul style="list-style-type: none"> • land mines • war |

b) **Suggest** two ways to reduce the threat to Africa’s gorilla population. **(2 marks)**

Response:

| | |
|------------------|---|
| Solutions | <ul style="list-style-type: none"> • logging in gorilla habitat should be restricted (legislation) • increase and strengthen habitat protection (parks, reserves, sanctuaries) • monitor and regulate bushmeat trade (laws, heavy fines, jail time) • gorilla rehabilitation and conservation programs (protected areas) • pet trade restrictions (laws) • public awareness and environmental education programs • disease control (regulations and restrictions on tour groups — size limits) • develop ecotourism (ensure revenue sharing and co-management at the local level) • significant funding to ensure habitat preservation and policing of threatened areas • use of a “bait gorilla” to catch poachers |
|------------------|---|

Use the following map to answer question 8.



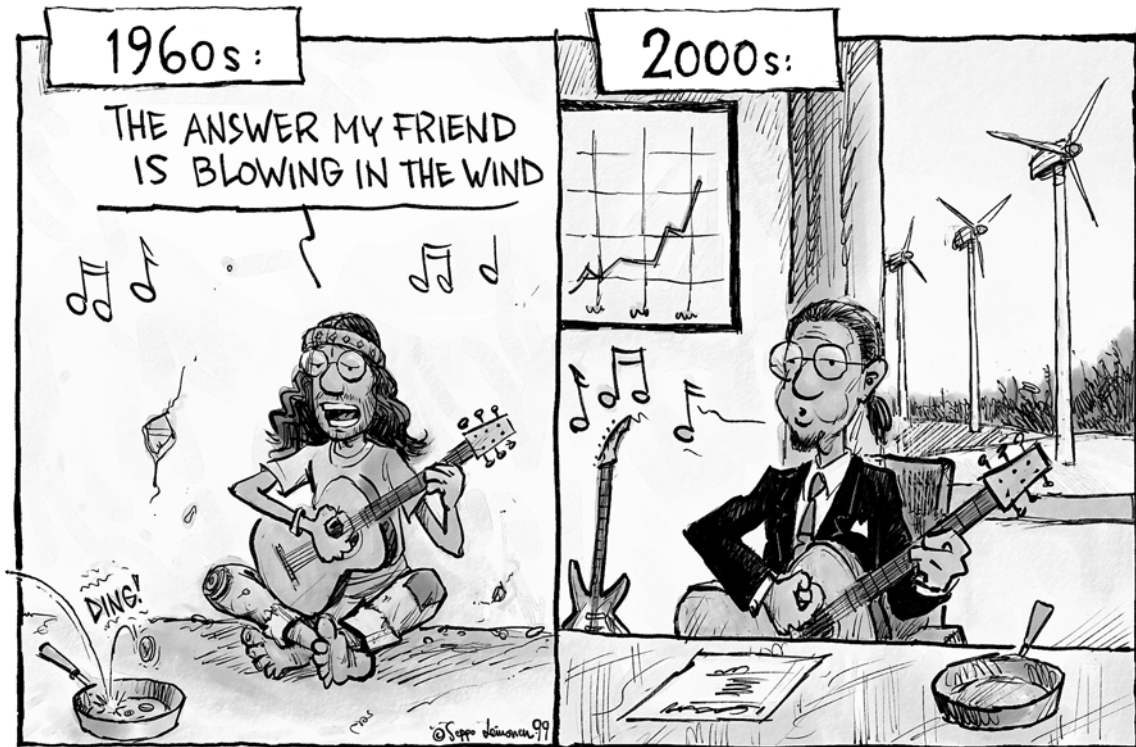
Based on a map from "Do We Need Hydrological Research?" by M. Falkenmark. In Swedish, Forskning och Fram Steg. No. 5, 1974.

8. **Explain** the economic, social and political consequences of the uneven distribution of water as shown in the map above. **(3 marks)**

Response:

| | |
|--------------------------------------|---|
| <p>Economic Consequences</p> | <ul style="list-style-type: none"> • Crop loss; bankruptcy; type of crops planted; cost of transporting water to these areas; building storage dams; the cost of water diversion schemes is very high. • Source of revenue (water is a commercial commodity). • Subsidy of water by governments. |
| <p>Social Consequences</p> | <ul style="list-style-type: none"> • Apathy (Who cares? I have lots of water). • Misuse/overuse of the resource. • Migration of thousands of people during drought and famine • Starvation, famine. • Agricultural calendar determined by the seasonal patterns of precipitation. • Overcrowding in areas of surplus. • Cultural celebrations are associated with distribution patterns. • Access to water often determines settlement patterns. • Loss of employment opportunities. • Loss of recreational opportunities. • Spread of disease — use of polluted water. • Increase in health problems and death rates. • Spread of disease — use of polluted water. • Increase in the difference between the haves and have-nots. |
| <p>Political Consequences</p> | <ul style="list-style-type: none"> • Countries with fresh water supplies have power over those without; wars will be fought over access to water; trade may be tied to access to water. |

Use the following cartoon to answer question 9.



9. a) What is the meaning of the cartoon?

(1 mark)

Response:

| | |
|--------------------------------------|--|
| <p>Meaning of the Cartoon</p> | <ul style="list-style-type: none">• Although the global environmental movement took root in the 1960s (with the promotion of global citizenship and environmental issues), the lack of economically viable technologies inhibited our ability to address concerns.• The answer to our growing energy needs is, quite literally, blowing in the wind.• Society benefitted from alternative energy.• Sell-out to corporate America.• Often we ignore the resources that are available to us.• Prophetic song of the 1960s will be realized in the 21st century.• The development of wind generated power production is profitable. |
|--------------------------------------|--|

b) **Outline** one advantage and one disadvantage associated with this energy source.

(2 marks)

Response:

| | |
|------------------------------------|---|
| Advantages of Wind Power | <ul style="list-style-type: none">• Wind power is environmentally friendly, clean, emission free and is a renewable energy source.• As the global supply of fossil fuels diminishes, wind energy (as well as other renewable energy sources) will increase in importance.• In comparison to other renewable energy sources, wind energy requires a relatively low grade of technology (in comparison to solar or hydro-electric alternatives).• Any area around the world that experiences constant and reliable wind patterns can harness the potential power of wind.• Wind power can provide enough electric power to satisfy the needs of many small urban centres and most rural locations.• Low maintenance costs. |
| Disadvantages of Wind Power | <ul style="list-style-type: none">• Despite its relatively low costs it is still economically out of the reach of many developing nations.• Cannot, on its own, satisfy the large-scale energy needs of major urban centres — it must rely on other (often non-renewable) energy sources.• Impacts the migratory patterns of birds.• Noise pollution.• Disrupts cellular phone and electronic patterns.• Site specific.• Initial start-up costs are high.• Not reliable, depends on the volume of wind.• Not aesthetically pleasing.• Relies on non-renewable energy for production of parts: blades. |

10. Using your understanding of geography and the data provided in the Case Study:

- **explain** how the physical and natural environment has encouraged the development of tourism in Costa Rica;
- **assess** the impacts of tourism on Costa Rica;
- **propose** ways to promote the sustainability of Costa Rica's natural resources.

Answer in **multi-paragraph** form.

(10 marks)

Response:

| | |
|--|--|
| Physical and Natural Conditions | <ul style="list-style-type: none">• It is located 8° to 11° N latitude, resulting in warm temperatures year round which attracts tourists.• Close proximity for the North American tourist.• Hydraulic action and corrasion have resulted in the formation of many beaches in the region.• Tropical maritime climate.• Warm ocean temperatures and clear waters have resulted in the formation of coral reefs surrounding Costa Rica.• Located at a complex system of plate boundaries resulting in some volcanic activity.• Rainforest results from high temperature and precipitation.• Rich biodiversity of plants and animals is attractive to tourists.• Tropical rainforest, freshwater marshes, coral reefs, sea turtles, nesting beaches, limestone caves, active and dormant volcanoes, as well as archaeological site are the major drawing forces for tourists. |
|--|--|

Impacts of Tourism

- Tourism is Costa Rica's top foreign earnings generator.
- Revenues from tourism go to local providers of goods and services.
- Largely a seasonal phenomena December to April due to extreme heat.
- Tourism creates jobs directly in the travel industry (airline, bus, car, rail, hotels).
- Tourism creates jobs indirectly through construction of resorts and roads, photography shops (film and cameras), telecommunications, agriculture (food for restaurants), retail (souvenirs and bookstores), restaurants.
- Activities have focused public attention on the need to protect conservation areas.
- Tourism generates tax revenue for governments which can be spent on health, education and development.
- Resort development and transportation routes alter the natural tropical rainforests (could trigger floods and landslides).
- Topsoil is carried to the rivers and lakes where contamination occurs.
- Drainage basins are altered and rainfall decreases creating a shortage of water.
- There is a loss of genetic resources which could support human welfare (foods, drugs).
- Noise and litter by visitors.
- Overharvesting of turtle eggs and illegal fishing.
- Increase in domestic prices due to high demand of wealthy tourists.
- Development has led to
 - destruction of vegetation;
 - pollution of aquatic habitat;
 - dumping of construction waste, which destroys coral reefs;
 - landfill covering in tropical mangroves.
- Too many visitors on trails of national parks have led to habitat destruction.
- Divers destroy coral reefs and fish habitat.
- The migration patterns of animals are disrupted.
- Limited infrastructure to meet growing demand.
- Displacing marine life from local areas
- Demand for local products.
- Competition for land between plantations and tourism.
- Pressure on fresh water and other resources.

Ways to Promote Sustainability

- The network of national parks comprise 25% of Costa Rica (must work to maintain size of these parks).
- Link the existing and planned national parks to create a large corridor of parks.
- Educate people about the importance of the tropical rainforest ecosystem and the human impact on the ecosystem (tour operators and visitors).
- Create a national reservation system to limit the number of visitors.
- Collect entrance fees to all parks and reserves and have that money go directly back to parks.
- Close national park at critical times of year (breeding season and turtle egg laying season).
- Create a national institute for biodiversity.
- Government agencies must continue to promote and manage tourism and to monitor the impact of tourism (Costa Rican Tourism Board, Ministry of Environment).
- Enforce strict rules and fines for resort developers who harm habitat.
- Improve wages and working conditions for park rangers.
- Create eco-efficient and environmentally friendly hotels.
- Ensure all tourist development is in the interests of local communities.
- Build efficient waste treatment facilities.
- Implement strict regulations governing guide operators in national parks.
- Require guided tours into parks to control park use.
- Use incentives to encourage vertical rather than horizontal development in resort sites in order to limit sprawl into sensitive areas.
- Encourage private/public joint ventures.
- Forgive international debt to preserve natural ecosystems.
- Continue to offer and promote “ecotourism” experience.
- Continue non-military position funding to ecotourism.
- Diversifying economy to reduce dependence on tourism.

END OF KEY