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1

91007



NEW ZEALAND QUALIFICATIONS AUTHORITY
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QUALIFY FOR THE FUTURE WORLD
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SUPERVISOR'S USE ONLY

Level 1 Geography, 2018

91007 Demonstrate geographic understanding of environments that have been shaped by extreme natural event(s)

2.00 p.m. Friday 9 November 2018

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate geographic understanding of environments that have been shaped by extreme natural event(s).	Demonstrate in-depth geographic understanding of environments that have been shaped by extreme natural event(s).	Demonstrate comprehensive geographic understanding of environments that have been shaped by extreme natural event(s).

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–16 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Merit

TOTAL

15

ASSESSOR'S USE ONLY

INSTRUCTIONS

Name ONE type of **extreme natural event**, and an **environmental case study (or studies)** of this event, that you will use to answer ALL of the questions in this booklet.

Extreme natural event:

Hurricanes //

Environmental case study (or studies):

Hurricane Katrina //

QUESTION ONE: NATURAL PROCESSES

Read the geographic concept below and refer to it when answering this question.

Geographic concept: Interaction

Interaction involves elements of an environment affecting each other and being linked together. Interaction incorporates movement, flows, connections, and interrelationships. Landscapes are the visible outcome of interactions. Interaction can bring about environmental change.

Fully explain the natural processes that operated to produce the extreme natural event in your environmental case study (or studies).

In your answer, include geographic terminology, the geographic concept of interaction, and integrated detailed supporting evidence from your environmental case study (or studies), along with supporting diagrams and/or maps.

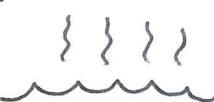
PLANNING (OPTIONAL)

MAPS/DIAGRAMS



1. The sun heats the Atlantic ocean to at least 26.5°C

2.

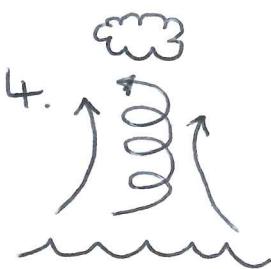


The warm ocean heats the air above causing rapid evaporation of water.

3.

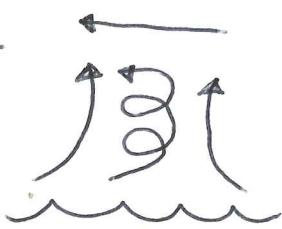


The coriolis force and the intertropical convergence zone causes the wind to spin in an anti-clockwise direction.



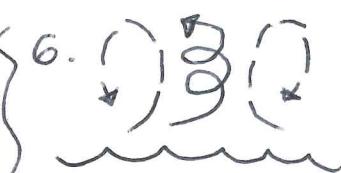
4. The warm ocean air cools and condenses and forms rain & clouds

5.



Jet streams (high-speed air currents between 10° - 30° latitude) pass the hurricane, sucking air out and more air rushes in.

6.



Hurricane Katrina relied on a constant supply of warm moist air which gave it energy. The air cools and condenses and the Hurricane releases large amounts of latent heat that kept it warm and spinning.

Hurricane Katrina occurred on 23rd to 31st of August 2005. Hurricane Katrina started in the Bahamas and became a Tropical Depression 12. The first process that produced Hurricane Katrina was the sun heats the Atlantic Ocean to at least 26.5°C . The second process was the warm ocean heats the air above causing rapid evaporation of water. The third process was when the coriolis force and inter-tropical convergence zone (ITCZ) causes the air to spin in an anti-clockwise direction. The fourth process is that the warm ocean air cools and condenses that forms //

rain and clouds. The fifth process that produced Hurricane Katrina was the jet streams (high-speed air currents between 10° - 30° latitude) passed Hurricane Katrina, sucking out air and causing more air to rush in. The last process that produced hurricane Katrina was when the air cooled and condensed. Hurricane Katrina relied on a constant supply of warm moist air to give it energy. As Hurricane Katrina comes on land the air cools and condenses causing it to release large amounts of latent heat that caused it to be warm and spin. Hurricane ^{the} Katrina continued travelling up southern-eastern of the USA it lost energy and finished on the 31st August 2005 in Kentucky. The interaction and flow between //

QUESTION TWO: EFFECTS

Read the geographic concept below and refer to it when answering this question.

Geographic concept: Change

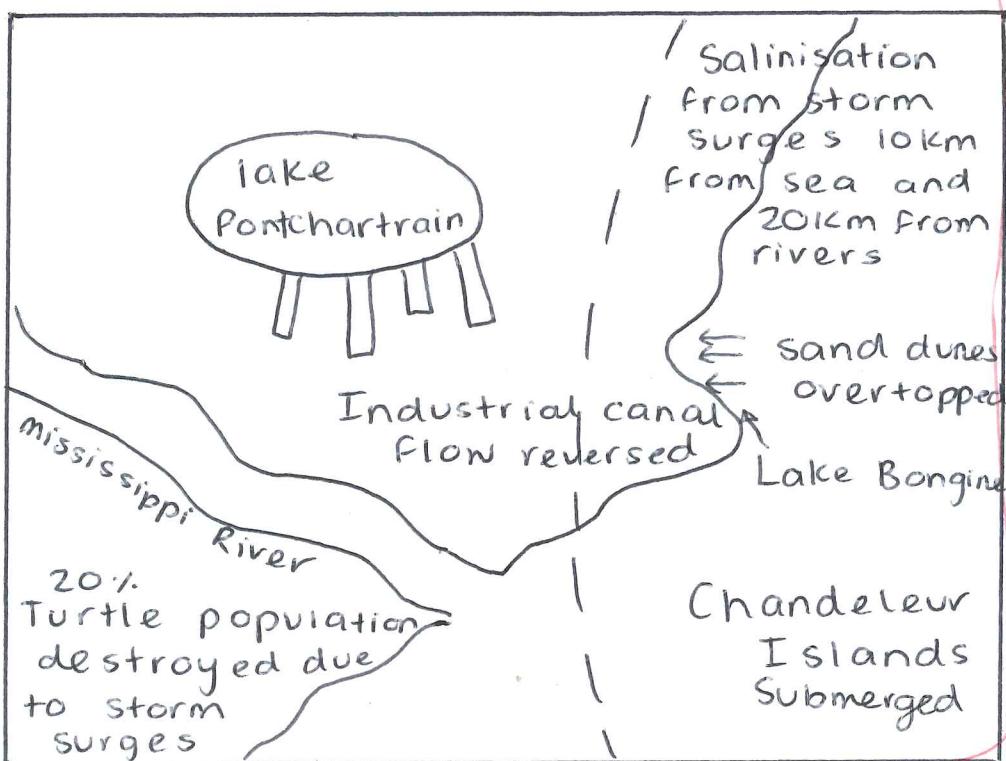
Change involves any alteration to the natural or cultural environment. It occurs at varying rates, at different times, and in different places. Some changes are predictable, recurrent or cyclic, while others are unpredictable or erratic. Change can bring about further change.

Fully explain ONE effect that your chosen extreme natural event has had on the natural environment in your case study (or studies).

In your answer, include geographic terminology, the geographic concept of change, and integrated detailed supporting evidence from your case study (or studies), along with supporting diagrams and/or maps.

PLANNING (OPTIONAL)

MAPS/DIAGRAMS



Hurricane Katrina occurred on 23rd-31st August 2005 and changed the natural environment of New Orleans. One effect of Hurricane Katrina that changed the environment was the storm surges.

New Orleans is made up of alluvial plains, swamps and lagoons. It's bordered by rivers, seas and lakes. The storm surges were 6-8m high and overtapped sand dunes, destroyed coastlines and fully submerged the Chandeleur islands. The Chandeleur islands were a breeding

ground for turtles, Fish, pelicans and ducks. Due to the storm surge, 20% of the turtle population was destroyed //

An effect from the storm surges was that it brought ~~sand~~ salt onland, 10km from the sea and 20km from the rivers. This caused salinisation and affected the plant growth, vegetation and made the soil infertile //

Another thing that storm surges affected was the canals. Due to this the industrial canal flow was reversed. Hurricane Katrina changed the natural environment of New Orleans and also affected the vegetation, land and Marine life //

QUESTION THREE: LONG-TERM RESPONSE

Read the geographic concept below and refer to it when answering this question.

Geographic concept: Sustainability

Sustainability involves adopting ways of thinking and behaving that allow individuals, groups, and societies to meet their needs and aspirations without preventing future generations from meeting theirs. Sustainable interaction with the environment may be achieved by preventing, limiting, minimising, or correcting environmental damage.

Examples of long-term responses to extreme natural events include:

- rebuilding (houses, business, infrastructure, etc.)
- relocating (moving in order to avoid the potential effects of future events)
- researching (causes, reasons for damage, ways to minimise the potential effects of future events, etc.).

Fully explain at least ONE way in which people responded, in the long term, to the extreme natural event in your environmental case study (or studies).

In your answer, include geographic terminology, the geographic concept of sustainability, and integrated detailed supporting evidence from your case study (or studies).

PLANNING (OPTIONAL)

After Hurricane Katrina, 80% of New Orleans was underwater. Hurricane Katrina caused a lot of damage to the city of New Orleans and it would be a long process to recover/rehabilitate. The Army Corps were an important group during the rehabilitation time and they organised the rebuild. The damage from Hurricane Katrina was a big economic loss and other countries offered their help. New Zealand donated \$2 million to relieve the economic loss. The Army Corps started researching what went wrong with Hurricane Katrina and what they could do next time to prevent so much damage. The Army Corps rebuilt levees but more stable T-shaped levees that could withstand a ~~Hurricane~~^{Category} 5 hurricane. Many people moved to Texas after Hurricane Katrina (~~70,000~~⁴⁺ people) and 70,000 people lived in trailers until their homes were rebuilt. New Orleans income came from the tourism industry from Blues & Jazz Festivals like Mardi Gras. After many tourist attractions like Louis Armstrong Airport, Biloxi Casino and Hyatt Hotel were closed it would take a long time to rebuild.

The Army Corps built the new more stable levees to sustain for future hurricanes.

MS

Merit Exemplar 2018

Subject	Geography		Standard	91007	Total score	15
Q	Grade score	Annotation				
1	M5	The candidate has partially explained the natural processes that operated to produce Hurricane Katrina. Both the written response and the diagram follow a clear sequence of events, and there is some detailed supporting evidence included (e.g. 26.5 degrees, South Eastern USA, Kentucky). The written response is mostly descriptive; however, the candidate has included some explanation within the diagram (e.g. 6. Latent heat), and this meets the criteria for an M5 to be awarded. For an M6 to be awarded for this question, each stage of the process should be explained.				
2	M5	The candidate has partially explained the effects of Hurricane Katrina on the New Orleans coastal environment. The diagram is excellent and is a good summary of the effects. There is some detailed supporting evidence within the answer (e.g. 6–8m storm surges, 10km inland) The written response is mostly descriptive; however, there is some partial explanation (storm surges causing salinisation) that satisfies the criteria for M5. For an M6 to be awarded, explanations of the effects should be more detailed.				
3	M5	The candidate has partially explained a long-term response to Hurricane Katrina (e.g. researching what went wrong and rebuilding of levees). There is some detailed supporting evidence (80% underwater, T-shaped levees). To be awarded an M6, the candidate could further explain how the stronger levee design will be more effective in future events.				