

# Mark Scheme (Results)

## Summer 2008

GCSE

### GCSE Geography B (1313/1F)

## Unit 1313 Paper 1F

Question Number	Answer	Mark
1(a)(i)	South (1)	(1)

Question Number	Answer	Mark
1(a)(ii)	Meandering (1)	(1)

Question Number	Answer	Mark
1(b)(i)	Urban land	(1)

Question Number	Answer	Mark
1(b)(ii)	West to east	(1)

Question Number	Answer	Mark
1(b)(iii)	<p>It takes floodwater from the river to the lake (1)</p> <p>It takes floodwater from the river upstream of New Orleans/the city/the city (1)</p> <p>It takes water from the river to the lake when there is a flood risk (1)</p> <p>It takes water from the river to prevent flooding in New Orleans (1)</p> <p>It is a <u>spillway/overflow channel</u> from the river to the lake (1)</p> <p>It is a <u>spillway/overflow channel</u> from the river to prevent flooding in New Orleans/the city (1)</p> <p>Do not accept water is taken <u>from</u> the lake <u>to</u> the river</p>	(1)

Question Number	Answer	Mark
2(a)(i)	Gulf of Mexico (1) Do not accept Caribbean Sea	(1)

Question Number	Answer	Mark
2(a)(ii)	Missouri, Arkansas OR Ohio Do not accept Platte, Tennessee or Atchafalaya	(1)

Question Number	Answer	Mark
2(b)	River sediment = C (1) River discharge = B (1)	(2)

Question Number	Answer	Mark
2(c)	It carries/washes nitrates/fertilisers/industrial waste <u>into the sea</u> (1) Do not accept waste, rubbish, sewage or sediment  Nitrates/fertilisers cause algae to grow (1) Leads to formation of a dead/oxygen-depleted zone (1) Process is called eutrophication (1)	(2)

Question Number	Answer	Mark
3(a)(i)	Sediment is excavated from it/river (bed/banks) (1) River bed is lowered (1) River (channel) is deepened/widened (1)	(1)

Question Number	Answer	Mark															
3(a)(ii)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Hard</th> <th>Soft</th> </tr> </thead> <tbody> <tr> <td>Build levees</td> <td>X</td> <td></td> </tr> <tr> <td>Replant forests on slopes</td> <td></td> <td>X</td> </tr> <tr> <td>Straighten river channels</td> <td>X</td> <td></td> </tr> <tr> <td>Build dams</td> <td>X</td> <td></td> </tr> </tbody> </table> <p>Four correct = 2 marks, three or two correct = 1 mark</p>		Hard	Soft	Build levees	X		Replant forests on slopes		X	Straighten river channels	X		Build dams	X		(2)
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Question Number	Answer	Mark
3(a)(iii)	<p>Raising the height of the banks (1)  OR building embankments (1)  Increases the size of the channel (1)  so channel can hold larger discharge/amount of water (1)  OR so water is less likely to escape/overflow (1)  Do not credit water is less likely to <u>flood</u></p> <p>Do not accept wall, floodwall or sea wall for banks  but the further comments can still be credited</p>	(2)

Question Number	Answer	Mark
4(a)(i)	<p>Swamps <u>where trees grow</u> (1)  Marshes <u>where grasses grow</u> (1) OR <u>saltmarsh</u> (1)</p> <p>Accept for 1 mark a description from the photograph:  eg Flat boggy land (1)  Flat land crossed by canals (1)</p> <p>Do not accept sand dunes or barrier islands</p>	(2)

Question Number	Answer	Mark
4(a)(ii)	<p>They/plants absorb some energy of the hurricane (1)  They/plants have a breaking effect on /slow down winds/surge (1)  They/plants absorb some water from storm surge (1)  OR reduce height of storm surge (1)</p> <p>Do not accept just they absorb water/rain  OR they slow down <u>the hurricane</u></p>	(1)

Question Number	Answer	Mark
4(b)(i)	<p>Wearing/washing away (of land/rock)(1)  <u>by</u> the sea/waves (1)</p> <p>Do not accept flooding  Accept abrasion/corrosion/hydraulic action etc  instead of wearing away</p>	(2)

Question Number	Answer	Mark
4(b)(ii)	<p>Lose (1)  Less (1)</p>	(2)

question Number	Answer	Mark
5(a)(i)	(Mississippi) levee (1)	(1)

Question Number	Answer	Mark
5(a)(ii)	Dry point (1) Above the surrounding swampy land (1) Less risk of flooding (1) Firm ground for building (1) Water supply from the river (1)	(1)

Question Number	Answer	Mark
5(b)	Any height between 1 and 2 metres/m No mark if metres/m are omitted Do not accept "0 - 5 metres"	(1)

Question Number	Answer	Mark
5(c)	Hurricane with a <u>wind</u> speed of 178 - 209 km/hr (1) and a storm surge of 2.7 - 3.9 m (1) No mark if units of measurement not given  Accept air pressure of 920 - 944 mb (1) OR the official wording: i.e. a hurricane that causes <u>extensive damage</u> (1) i.e. Maximum 1 mark if no data given from Figure 5	(2)

Question Number	Answer	Mark
6	Large (1) circular (1) area of cloud /white area (1) Spiralling (1) in anticlockwise direction (1) Central gap/hole in cloud OR eye (1)  Accept other valid descriptive points: eg estimate of its diameter e.g. 600 - 1,000 km across estimate of its size in relation to say Florida, etc (Can get a mark for this as well as one for "large")  Do not accept comments on sea temperatures or features not visible in the photograph	(3)

Question Number	Answer	Mark
7(a)	<p>Must point out <b>changes</b> in location (do not credit the starting point) and in a correct sequence:</p> <p>Eg (From Latitude 23° N) Katrina moved N/NW (1)  It then veered W (1) and made a landfall in Florida (1)  It then moved W (1) over the Gulf of Mexico (1)  It moved N or along Longitude 88° W (1)  and made a second landfall in Louisiana/USA (1).  It passed through New Orleans (1)  and continued N/inland (1).</p> <p>Do not accept ungeographical terminology (eg moved above Cuba instead of north of Cuba; moved down instead of south-west) OR vague comments (eg moved over the sea instead of moved over the Gulf of Mexico)</p> <p>Changes in the hurricane's strength are irrelevant to the question</p>	(4)

Question Number	Answer	Mark
7(b)	<p>Giant wave (1)  Abnormally high sea <u>caused by a hurricane</u> (1)  Large amount of water pushed inland (1)  Rise in sea level <u>caused by a hurricane</u> (1)</p>	(1)

Question Number	Answer	Mark
8(a)	<p><b>Did not want to leave</b>  They had survived previous hurricanes (1)  They were not expecting such a catastrophic flood (1)  They expected the levees to protect them (1)  They feared their possessions would be <u>damaged or stolen</u> if they left (1)  They were scientists studying effects of hurricanes (1)  They wanted to <u>look after</u> a relative/pet (1) *  They had nowhere to go and stay (1) *</p> <p>Do not accept they did not want to leave their home  OR they had always lived there</p> <p><b>Could not leave</b>  They were too old/ill/disabled to travel (1)  They lacked transport /did not own a car (1)  They were too poor / could not afford to travel(1)  Roads were blocked with traffic trying to escape (1)  They had no cash left at the end of the month (1)  They left it too late to make arrangements (1)  They did not hear the evacuation order (1)  OR did not understand the evacuation procedures (1)  They worked in emergency services (eg doctor, nurse or police) so had to stay for their job (1)  They had to <u>look after</u> a relative/pet (1) *  They had nowhere to go and stay (1) *</p> <p>Do not accept they were trapped in houses /under rubble</p> <p>* If the group of people are not crossed/identified  only accept reasons that are applicable to both</p>	(2)

Question Number	Answer	Mark																
8(b)	<table border="1"> <tr> <td>Rain from Katrina was the main cause of flooding</td> <td></td> </tr> <tr> <td>Storm surges entered the city</td> <td>x</td> </tr> <tr> <td>The Mississippi River overflowed its banks</td> <td></td> </tr> <tr> <td>Some levees gave way and increased the flooding</td> <td>x</td> </tr> <tr> <td>85% of the city was flooded</td> <td></td> </tr> <tr> <td>All the land that flooded was below sea level</td> <td></td> </tr> <tr> <td>Worst floods were in the part of city south of river</td> <td></td> </tr> <tr> <td>Poorly designed floodwalls made flooding worse</td> <td>x</td> </tr> </table> <p>1 mark for each correct cross.  If more than three statements crossed, deduct 1 mark from total score for each cross in excess of three.</p>	Rain from Katrina was the main cause of flooding		Storm surges entered the city	x	The Mississippi River overflowed its banks		Some levees gave way and increased the flooding	x	85% of the city was flooded		All the land that flooded was below sea level		Worst floods were in the part of city south of river		Poorly designed floodwalls made flooding worse	x	(3)
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Question Number	Answer	Mark
9(a)(i)	Battered by storm surge (1) Pressure/force of flood/wave/seawater (1)  Do not accept battered by water/rain OR the bridge was too weak	(1)

Question Number	Answer	Mark
9(a)(ii)	Strong winds (1) Battered by winds (1) Battered by debris blown at it (1)  Do not accept battered by rain OR the roof was too weak	(1)

Question Number	Answer	Mark
9(a)(iii)	No marks for just mentioning/lifting health hazards from Figure 5. Candidates must explain why it is a hazard (e.g. by pointing out it can cause disease, injury or infection) One well-explained hazard (eg a <u>named</u> disease is linked to it) can score the two marks  Water/ground was polluted/contaminated (max. 1) Illness from water containing oil/sewage/dead bodies (1) eg typhoid/cholera/diarrhoea (1) Thirst from lack of drinking water (1) Illness/poisoning from chemical residues in ground (1) eg lead/mercury/arsenic (1) Disease from insects breeding in still water (1) eg malaria/mosquitoes (1) Injury/death from collapsed road bridge (1)  Do not accept injuries from Superdome's damaged roof OR from subsidence due to pumping out floodwater	(2)

Question Number	Answer	Mark
10(a)	Floodwall Do not accept wall, seawall, groyne, levee or sandbags	(1)

Question Number	Answer	Mark
10(b)	Dropping sandbags/ballast/rock (1) Plus one further mark: to patch/repair/fill the gap in the floodwall(1) OR to stop water in the canal flowing out (1)  Do not accept dropping food or rescuing people	(2)



Question Number	Indicative content
11(a)	<p>No mark for choice of option. Credit <b>valid reasons</b> for their choice.</p> <p>Criteria include: level and reliability of protection; sustainability; health and safety (including building design and evacuation measures); types of engineering (hard v soft); impact on the environment of the delta (wetlands, barrier islands); effects on habitats/wildlife; effects on different groups in society; effects on trade, industry and employment; the attention given to future climate change (global warming, sea level rise, hurricane frequency); cost and cost-effectiveness.</p> <p style="text-align: right;">(6)</p>

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-3	<p><b>Only considers a few relevant criteria.</b> <b>Makes vague comments and/or simple points lifted from Figure 12.</b></p> <p>e.g. Option A will have levees to withstand strong hurricanes. Option A will be very popular with the people who live in New Orleans. They will build floodgates on Lake Pontchartrain. They will build new neighbourhoods with open spaces and mixed housing. New buildings will be hurricane-resistant in B. Some low-lying areas will be raised with landfill. Rock revetments will be built in the barrier islands. Evacuation procedures will be improved. Money will be spent wisely In Option C. In Option C low-lying areas will be turned into parks. Sediment diversion gates will be built in the levees. They will dam the Mississippi River Gulf Outlet. In Option C affordable housing will be built. Derelict sites will be redeveloped. The Superdome will house evacuees for a week. Dune grasses will be planted on barrier islands in D. They will let 65% of the Mississippi's water flow into the Atchafalaya River. They will build a new port in the delta on the Atchafalaya River.</p> <p><b>To reach the top mark</b> Makes a few simple points</p>

Level 2	4-6	<p>Considers a number of relevant criteria.  May use more sources than Figure 12.  <b>Makes a number of simple points, but also includes at least one developed (D) point (i.e. elaborates with more detail, or explanation, or makes comparisons).</b></p> <p>e.g.  Option A will protect the city against storm surges of 6 or 7 metres that you can get with a Cat 5 storm (D)  A city-wide light rail system will make evacuations easier for people without a car (D)  Closing the Industrial Canal and MRGO will prevent storm surges entering the city by these routes (D)  Closing MRGO will reduce the movement of saltwater into freshwater marsh and so reduce erosion (D)  Revetments shield barrier islands from erosion so these will be a strong natural defence v storms (D)  Option B/D uses some soft engineering techniques that work with nature, not against it (D)  Option C is half the cost of Option A (D)  Option D will cost \$12 billion (D)  Option D is the cheapest one (D)  The planted marsh grass will trap more sediment and provide a stronger buffer against hurricanes (D)  Not building on low-lying land means future floods will cause less damage to people and property (D)  Sediment diversion will help reduce subsidence of the delta and so give NO better protection against storm surges (D)</p> <p><b>To reach the top mark:</b></p> <ul style="list-style-type: none"> <li>• Includes a few developed (D) points</li> <li>• Writes in sentences with a clear, structured style.  Spells, punctuates and uses grammar rules with some accuracy</li> </ul>
	QWC	

Question Number		Indicative content
11(b)		<p>No mark for choice of rejected options. Credit <b>valid reasons</b> for rejections</p> <p>Criteria are same as in a (i)</p> <p style="text-align: right;"><b>(6)</b></p>
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-3	<p><b>Only considers a few relevant criteria.</b> <b>Makes vague comments and/or simple points lifted from Figures 10 and 12.</b></p> <p>e.g.</p> <p>Option A is not environmentally friendly. Option A does not mention the coastal wetlands. Option B will be a waste of money. Option D will be unpopular with people who live in New Orleans Levees to withstand Cat 5 hurricanes will cost \$35 billion. C will only protect the city against Cat 4 storms Option B/D will only protect the city against Cat 3 hurricanes. It will take 25 years to build a new port in Option D. Option D does not mention emergency procedures.</p> <p><b>To reach the top mark</b> Makes a few simple points</p>
Level 2	4-6	<p><b>Considers a number of relevant criteria.</b> May use more sources than Figures 10 and 12. <b>Makes a number of simple points, but also includes at least one developed (D) point (i.e. elaborates with more detail, or explanation, or makes comparisons)</b></p> <p>e.g.</p> <p>The total cost of Option A will be \$44 billion (D) The new hurricane-resistant buildings in Option A may be too expensive for poor people to buy (D) Revetments are a more expensive way of protecting islands than adding sand and planting grasses (D) With global warming, hurricanes may be stronger and more frequent in future, so options B, C and D are less appropriate (D) The levees in Option C will not protect the city against such strong hurricanes as those in A (D) Factories may have to relocate if the Industrial Canal is closed (D) Halving the discharge in the lowest section of the Mississippi will mean ships have problems reaching NO (D) The rising SL with global warming will increase coastal erosion and flooding at high tide, especially during severe storms (D)</p> <p><b>To reach the top mark</b></p> <ul style="list-style-type: none"> <li>• Includes a few developed (D) points.</li> <li>• Must refer to two options.</li> </ul>

## Information for examiners

	<b>Option A</b>	<b>Option B</b>	<b>Option C</b>	<b>Option D</b>
<b>New flood defences</b>	<p>Cat 5 levees protect against 500yr floods</p> <p>Lake Pontchartrain flood-gates protect NO against storm surges from N</p> <p>Levee round L Borgne protect NO against storm surges from E BUT surges could still come from S part of lake.</p>	<p>Cat 3 levees protect against 100yr floods</p> <p>Canal floodgates protect NO against surges from E and N</p> <p>Flood risk from rain when floodgates are shut</p>	<p>Cat 4 levees protect against 200yr floods</p> <p>Canal floodgates and IC dam protect NO against surges from N</p> <p>Flood risk from rain when floodgates shut</p> <p>MRGO dam reduces saltwater intrusion and surges from E BUT a surge could still come along GIWW</p> <p>Parks provide buffer zones v hurricanes</p>	<p>Cat 3 levees protect against 100yr floods</p> <p>Canal floodgates and IC dam protect NO against surges from N</p> <p>Flood risk from rain when flood-gates shut</p> <p>MRGO dam reduces saltwater intrusion and surges from E BUT a surge could still come along GIWW</p> <p>Swamps/parks provide buffer zones v hurricanes</p>
<b>Plans for coastal wetlands and barrier islands</b>	<p>No plans to restore wetlands or barrier islands</p> <p>Continuing retreat of delta increases coastal flood hazard in NO and lowers protective value of the new levees</p>	<p>Adding mud and grass reduce subsidence</p> <p>Revetments reduce erosion of barrier islands and allow marsh to grow behind dunes</p> <p>Better natural protection v hurricanes</p>	<p>No plans to restore islands</p> <p>Water/sediment diversion gates mean nitrates trapped in marsh and delta subsidence reduced</p> <p>Slightly better natural protection v hurricanes</p>	<p>Water/sediment diversion gates mean nitrates trapped in marsh and greatly reduced subsidence</p> <p>Adding sand and grass restores barrier islands</p> <p>Much better natural protection v hurricanes</p>
<b>Plans for a future flood emergency</b>	<p>No evacuation plan, BUT higher levees so a new flood is less likely</p> <p>Light rail system – so easier for people without cars to evacuate</p>	<p>Clearer evacuation plans eg signage</p> <p>Less land below SL so flood hazard reduced</p> <p>Wind-proof buildings</p>	<p>More shelters and with better supplies for those who cannot leave</p> <p>High-rise dwellings will be flood-resistant</p> <p>Smaller city would be easier to evacuate</p>	<p>No plan, BUT lowest areas not populated now, so flood hazard reduced</p> <p>Less risk of river flooding with its discharge halved</p> <p>Smaller city would be easier to evacuate</p>
<b>Impact on navigation</b>	<p>Mississippi River traffic not disturbed</p> <p>Navigation on MRGO and GIWW unaffected</p>	<p>Mississippi River traffic not disturbed</p> <p>Navigation on MRGO and GIWW unaffected</p>	<p>Mississippi River traffic not disturbed</p> <p>MRGO closed (BUT few ships use it)</p> <p>No access to Lake Pontchartrain for ships on Industrial Canal (BUT few use it)</p>	<p>Hard for ships to reach NO with discharge halved BUT Mississippi barges can access the new port</p> <p>MRGO closed (but few ships use it)</p> <p>Wing dykes &amp; revetments improve river navigation</p>
<b>Environmental impact</b>	<p>Large scale hard engineering may be an eyesore</p> <p>Salinity of LP may alter</p>	<p>Increase in habitats – so endangered species more protected</p>	<p>Increase in habitats – so endangered species more protected</p> <p>Fewer nitrates in sea so</p>	<p>Big increase in habitats – so endangered species more protected</p> <p>Far fewer nitrates in sea</p>

	if floodgates often shut - marine life affected		less eutrophication	so far less eutrophication
	<b>Option A</b>	<b>Option B</b>	<b>Option C</b>	<b>Option D</b>
<b>Social impact</b>	Lower rents encourage poor people to return  Mixed housing areas encourage ethnic integration	Mixed housing areas encourage ethnic integration  Hurricane-resistant housing too costly for poorer people?	Affordable houses allow poor to return  Ethnic Integration may be limited without new mixed housing areas	Fewer low skilled jobs with less heavy industry  % of black people will fall as relatively more lived in the flood-damaged areas  Lower river flow may put NO's water supply at risk
<b>Economic impact</b>	New businesses encouraged by better flood defences and financial incentives  Labour force will grow with housing incentives  Improved public transport so labour force more mobile	Hard to attract back businesses and workers back with only Cat 3 flood protection	New businesses encouraged by better flood defences  Labour force will grow with new housing  Some factories along Industrial C may close  Less sea pollution – so fishing revival?	Hi tech offices added  Ecotourism boom with new swamps?  Less river trade & water so NO factories decline. BUT port on Atchafalaya offers new jobs  Less sea pollution – so fishing revival?
<b>Time to implement</b>	Very long time (20 yrs?) to build Cat 5 levees  Increase in subsidence, SL and hurricanes may overtake levee building	Fairly short time to build Cat 3 levees  Landfilling will take time to settle before rebuilding can start	Long time (12 yrs?) to build Cat 4 levees  Increase in subsidence, SL and hurricanes may overtake levee building	Fairly short time to build Cat 3 levees  25 yrs to build new port - may not mesh in with decline of industry in NO
<b>Effects of future climate change</b>	Cat 5 levees offer best safeguard against SL and climate change  20% increase in flow of Mississippi will slightly increase flood hazard	Cat 3 levees give least safeguard against SL and climate change  20% increase in flow of Mississippi will greatly increase flood hazard	Cat 4 levees give a fair safeguard against SL and climate change  20% increase in flow of Mississippi will increase flood hazard	Cat 3 levees give least safeguard against SL and climate change  20% increase in flow of Mississippi offsets cost of the planned 50% decrease
<b>Long term sustainability</b>	Doubtful – NO will still subside, SL will rise and delta will still retreat	Very doubtful - NO will still subside and SL will rise	Doubtful - NO will still subside and SL will rise	Good - no residents in most flood-prone areas  New port sustainable – on dry land in part of delta that is not sinking
<b>Costs and cost-effectiveness</b>	\$44 billions Govt unlikely to fund it  Less than \$75 billions damage done by Katrina  Cat 5 levees are dearest and may not be cost-effective with Cat 5	\$11.5 billions Govt likely to fund it  Far less than \$75b damage done by Katrina  Cat 3 levees cheap but may not be cost-effective here given	\$21 billions Govt might not fund it  Less than \$75 billions damage done by Katrina  Cat 4 levees dear but may be more cost-effective given future	\$11.1 billions Govt unlikely to agree  Far less than \$75 billions damage done by Katrina  Cat 3 levees cheap but may be cost-effective here as lowest areas not built on

	storms so rare  BUT some other costs: eg clean-up, rebuilding, financial incentives to workers and businesses	future climate change  BUT other costs: eg clean-up, rebuilding, landfilling, evacuation route signs	climate change  BUT some other costs: eg: clean-up, rebuilding, equipping of refuge centres	BUT many other costs: eg clean-up, rebuilding, new port, changes to Old River Control Structures
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