

**MARK SCHEME for the May/June 2010 question paper
for the guidance of teachers**

0449 BANGLADESH STUDIES

0449/02

Paper 2 (Environment and Development of Bangladesh),
maximum raw mark 75

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

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- Answers worthy of a mark are separated by /.
- Where development marks are allowed for expanding upon a point, this indicated example, 'dev 1'.
- Except where proper nouns required or otherwise indicated, candidates do not have use the wording in mark scheme providing the meaning is the same.
- In all cases where an answer is given which is valid but not mentioned in the mark scheme, this should be accepted. If in doubt contact the team leader.

1	(a)	Study Photograph A on the Insert, which shows a satellite image of part of Bangladesh.	
	(i)	Name the river marked as A. Padma. Accept Ganges.	[1]
	(ii)	Name the landform marked as B. Sylhet hills.	[1]
	(iii)	Describe the landscape of the area which is marked by the broken line (- - - -) and labelled C. Many rivers/braiding/muddy water or water or rivers containing much silt/rivers more or less parallel/delta.	[1] [2]
	(iv)	Explain how the feature C was formed. Rivers flowing in contain heavy loads of silt/(or alluvium)/erosion in hills to north or named area/river meets sea which checks its flow/water cannot all escape into sea/branching of river to find alternative routes to sea/coast being extended as silt builds up/fresh water meets salt water/silt deposited, etc. If explanatory points included in (iii) above, allow these to be carried forward if not repeated here.	[1] [3]
	(v)	The sea appears in three different colours along the line X – Y. Suggest an explanation for this. Depends on amount of silt in water/area X is where river meets sea and much silt is being deposited/pale blue colour is where less silt is being deposited/dark blue or Y is where water is clear/ beyond effects of river/accept reference to varying depth of the water.	[2]
	(vi)	Why is the area marked D very good for fish? Many nutrients in water/from silt brought down by rivers which contains nutrients/reference to vast quantity of fresh water from 3 main rivers/lack of strong currents/accept mixing of saline and fresh water but not brackish on own.	[3]

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(b)	Study Fig.1, which shows the number of boats used for fishing in Bangladesh.	
(i)	Describe the changes in the number and types of boats used for fishing. Total number of boats has decreased by nearly a half or by 22 200 (no mark for 'decreased' on its own)/motor boats have increased from small proportion to c. 40% or almost half or similar/number increased fifty times/number of non motorised boats has decreased by about a third or by 32 000. 1 mark reserved for types. Max 1 if reference only to increase or decrease without numbers or proportions. No credit for 'lifting' figures from table.	[2]
(ii)	Describe two methods of fishing in Bangladesh. Traditional fishing boats with nets and or long lines/trawlers for open seas with powerful engines which can bring in large catches/traditional use of bamboo poles or other rods/methods can refer to types of craft and – or method of capturing fish.	[2]
(c)	What is meant by the term 'aquaculture'? Water which is managed especially to encourage fish to breed and grow or similar/allow fish farming.	[1]
(d)	Study the following statement: 'Developing aquaculture inland is the best way to increase fish production in a sustainable way.'	
(i)	Give one piece of evidence which supports this statement. Much of country is under water for at least parts of the year/ <u>many rivers and – or lakes in Bangladesh</u> /more control over process/fish are then caught nearer to population/much easier or cheaper or safer than fishing at sea or on rivers/less reliant on expensive technology.	[1]
(ii)	Give one piece of evidence which does not support the statement. Amounts caught may be small/not appropriate for commercial fishing because of distance to markets and or due to small scale/shrimp aquaculture can lead to increased salinity/this in turn can lead to death of trees	[1]
(iii)	Do you agree with the statement? Give reasons for your answer. No marks for yes or no but for giving reasons <u>In favour</u> – water in padi fields/water in irrigation ditches/water in derelict ponds/appropriate for intensive subsistence agriculture/therefore of benefit to majority of pop/fits with agriculture when water recedes/GM species may help/gher culture/good source of protein for rural dwellers etc. <u>Against</u> – no tradition of fishing for many inland communities/marine fishing could be much more productive/marine would increase exports of fish/taxes could be used to improve rural infrastructure/problem with ponds, padis, etc. – fish could be lost during flooding/due to delayed rains, etc.	[3] [1]

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2	(a)	Study Fig.2 which shows a rainfall graph for Khulna.	
	(i)	What is the rainfall in the wettest month for Khulna? 530 mm. No mark if mm is missing.	
	(ii)	Describe the annual pattern of rainfall at Khulna. No rainfall (or very dry) during first 3 months of year/small amount in April – 20 mm/much (or similar expression of great increase) wetter in May and June – over 200mm/very wet in July or double rainfall of June/declines after July/gradual decrease to October/no rain in November and December. 3 × 1 No marks for figures unless included in a sentence about 'pattern'.	[3]
	(iii)	Explain how this pattern of rainfall affects the subsistence farmers in the area. Great variations in availability of water affects what can be grown and when/floods during and after monsoon may make cultivation impossible/after flooding water is valuable for growing rice/Aman rice planted in August/but may not be possible due to excessive floods/need access to irrigation during dry season/other crops can be grown during dry season/HY boro rice can be planted in December/if irrigation is available/harvested before monsoon, etc. (no additional credit for details of why Aman grown). 3 × 1 but 2 possible for well explained statement.	[3]
	(b) (i)	Name and describe two methods of irrigation. Shallow and tube wells/dug deep enough to access groundwater/water needs to be raised/named methods of raising e.g. motor or mechanical, treadle, diaphragm etc. Using surface water in channels from river/may be dam to create storage/raising of water still needed but easier because shorter rise needed/credit named ways of lifting if different from answer to first part/sluice gates avoid need to lift. Max 5 marks for one method. 6 × 1	[6]
	(ii)	Choose <i>one</i> factor that affects subsistence farming other than availability of water. Explain how this factor affects agricultural production. Temperatures/availability of land - land scarcity/fertilizer/HY seeds/machinery or equipment/money or credit for buying equipment, etc./effects of typhoons/difficulty in getting to market due to poor infrastructure/law and order issues 3 × 1 but 2 for a well explained statement. Max 2 if no explanation of how.	[3]
	(c)	Study Fig.3 on the Insert, which is about floating gardens.	
		Explain how a floating garden can be constructed. Water hyacinths grown to cover water/bamboo poles laid on top/another layer of hyacinths on top/dung, compost and dirt laid on top/crop can then be planted.	[3]

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	(d)	Study the following statement: 'Floating gardens could bring many benefits both to subsistence farmers and to the Bangladesh economy.'	
	(i)	Give one piece of evidence which supports the statement. Easy to construct/cheap to construct/flooding is a major issue so could be widely used/creates more space for growing crops/ <i>can be transplanted after floods finish</i> /enables surplus food to be grown so some can be sold/increase food production for Bangladesh/benefits economy because more food is grown or less imports needed/not reliant on government for help, etc./other farmers can quickly copy the idea/farmers do not suffer or go hungry because of floods.	[1]
	(ii)	Give one piece of evidence which does not support the statement. Small scale and would not provide much food/could be damaged by excess of water/waterways used for transport so could be clashes/subsistence farmers may not have money for bamboo etc./may help farmers but not economy as produce unlikely to be available for selling/idea introduced by an NGO so will not be resources to introduce it everywhere.	[1]
	(iii)	Do you agree with the statement? Give reasons for your answer. No marks for yes or no but for giving reasons. Many of points to be mentioned are covered in lists above.	[3] [1]
3	(a)	Study Fig.4, which shows the percentage of land covered by forest in some south Asian countries.	
	(i)	Which country was least forested in 2005? Pakistan	[1]
	(ii)	Which country had the biggest decrease between 1990 and 2005? Burma	[1]
	(iii)	Which countries increased their percentage of forested land between 1990 and 2005? Bhutan, India, China All three for 2 marks, two correct for one mark.	[2]
	(b)	Study Fig.5, which shows changes to the area covered by forest in Bangladesh between 1990 and 2005.	
	(i)	How many hectares of forest were lost between 2000 and 2005? 13 000. Reference needed to thousands for the mark.	[1]

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	<p>(ii) Explain why Bangladesh is losing its forests.</p> <p>Firewood/farming/flooding/timber or building or housing or paper/rising sea level/shrimp farming. Do not credit 'space needed' if no reference to any of above factors. Max of 3 x 1 for reference to each factor. 2 for well explained statement e.g. 'Population pressure leads to people cutting trees to create more space for farming' or 'flooding can expose roots and cause loss of trees' or 'firewood is a major source of energy for many in rural areas,' etc. Accept reference to illegal logging or destruction by tribal groups only if reference to a specific area or example e.g. Chittagong Hill Tracts.</p>	
	<p>(iii) Describe the problems that can be caused by deforestation.</p> <p>Soil erosion/leaching/desertification <i>or drought</i>/loss of species/release of carbon or reference to global warming/worsen effects of cyclones/lowering of water table/decreased evapotranspiration/flooding provided linked to soil erosion. Max of 3 x 1 for naming these problems. Up to 2 for description of a problem. E.g. removal of trees allows heavy rain to reach soil which can then be washed away.</p>	[5]
	(c) Study Photograph B.	
	<p>(i) Name and describe the type of forest shown in the photograph.</p> <p>Mangrove or <i>tidal</i>/roots branch above ground/cope with changing sea level/grows in saline water/evergreen/pneumatophores or roots taking oxygen from air.</p>	[1] [1]
	<p>(ii) Where in Bangladesh can this type of forest be found?</p> <p>Coastal areas of Sundarbans or Chittagong – Cox's Bazaar coast or seaward edge of islands in delta or relevant name of section of coast. Must refer to a coastal area.</p>	[1]
	<p>(iii) State two possible threats to this type of forest.</p> <p>Global warming causing rises in sea level/more severe typhoons for same reason/possible disturbance by shrimp fishing. 2 x 1</p>	[2]
	(d) Study the two statements below:	
	<p>A 'It is essential that Bangladesh manages its forests to prevent further reduction in the area covered.'</p> <p>B 'Bangladesh must use all of its land, including the forests.'</p>	
	<p>(i) Give one piece of evidence which supports statement A.</p> <p>E.g. very little forest and can not afford to lose what it has/forests needed to protect against soil erosion/need to maintain biodiversity/combat climate change/reduce flooding/reduce risks of desertification/encourage tourism/maintain water table/etc.</p>	[1]
	<p>(ii) Give one piece of evidence which supports statement B.</p> <p>Large and growing population needs to be fed or housed/timber can be valuable export/other areas such as Burma (Myanmar) and Himalayas far more suited to being forested.</p>	[1]

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	(iii)	Which statement do you agree with the most? Give reasons for your answer. No marks for yes or no but for giving reasons.	
4	(a)	Study Fig. 6, which shows gas fields and gas pipelines in Bangladesh.	
	(i)	Describe the distribution of the <i>gas fields</i>. Main conclusion in east of country/from Sylhet down to Comilla (accept Noakhali or Feni)/isolated one in Chittagong province/2 offshore fields in Bay of Bengal/one near coast of delta. 3 × 1 Reference must be made to distribution with reference to, for example, compass points, coast, names of provinces and or cities.	[3]
	(ii)	Suggest reasons for the distribution of the natural <i>gas pipelines</i>. Links gas fields with cities/concentration of consumers in cities/industry in or near cities/northwest not connected because of distance from gas fields/credit reference to the off shore pipeline/accept generation of electricity near to cities.	[3]
	(iii)	Describe <i>three uses of natural gas in Bangladesh</i>. Production of fertilisers/generates electricity/power machines in factories/power light and equipment in offices and homes/compressed natural gas or CNG used for cars or transport.	[3]
	(b)	Study Fig.7, which shows production of natural gas in Bangladesh.	
	(i)	Describe how the production of gas changed from 1980 to 2004. Almost continuous increase/from 35+ or – 5 bn cu ft to approx 450 bn cu ft/reduced increase from 1996 to 1997/biggest increase was from 2000 to 2002. Max 1 for figures if not linked to a description.	[2]
	(ii)	Suggest <i>two reasons for the changes in production</i>. Growing demand from increasing population/growing industry/increased production of fertilisers, etc./discovery of additional reserves of gas/extending pipeline network to reach more people/many companies investing in Bangladesh's gas. Do not credit 'demand' on its own. 2 × 1	[2]
	(iii)	It is estimated that Bangladesh has reserves of 25 trillion cubic feet of gas in Bangladesh. Describe <i>two problems which could develop if production keeps on rising</i>. Reserves will run out more quickly/fewer reserves for the future/contribution to global warming/accept price rising as becomes scarce. 'Non renewable' on its own is not sufficient.	[2]

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	(c)	<p>There are 3 state owned Petrobangla companies and 2 multinational companies involved in the production of natural gas. Describe the advantages for Bangladesh of <i>each</i> type of company.</p> <p><u>State</u> – production can be linked to needs of Bangladesh/profits go to state to improve infrastructure and services/prices will not fluctuate/gas can be conserved for future use/profits do not go overseas.</p> <p><u>Multinational</u> – bring expertise and experience from other areas/e.g. newest technology/access to finance from other countries/money not lost through corruption/accept sale of gas overseas with taxes paid on earnings.</p> <p>Max 3 if only one type mentioned.</p>	
	(d)	<p>Study the two statements below:</p> <p>A Bangladesh should increase its production of natural gas so some can be exported.</p> <p>B Bangladesh should strictly limit the amount of gas produced each year.</p>	
	(i)	<p>Give one piece of evidence which supports statement A.</p> <p>Poor country which needs the income/rising world prices could bring many benefits for Bangladesh/money needed for e.g. health or education or infrastructure/money enables development so Bangladesh can diversify its industries/Bangladesh able to produce more fertilisers to help increase food production etc. Credit references to both exports and increased production if relevant.</p>	[1]
	(ii)	<p>Give one piece of evidence which supports statement B.</p> <p>Finite resource/needs to be conserved for future/prices will increase as global supplies decrease/other more sustainable sources of energy need to be developed/Bangladesh needs the gas for its own development/accept reference to problems caused if gas used up quickly etc.</p>	[1]
	(iii)	<p>Which statement do you agree with the most? Give reasons for your answer.</p> <p>No marks for yes or no but for giving reasons.</p>	[3] [1]
5	(a)	<p>Study Fig. 8, which shows changes in the infant mortality rate (IMR) between 1990 and 2008. It also shows predicted changes up to 2015.</p>	
	(i)	<p>How did Bangladesh's infant mortality rate change between 1990 and 2008?</p> <p>Decline from 100 deaths per 1000 births to 52 deaths by 2008 <i>or by 48 per 1000</i>/nearly halved or similar. 'Went down' on its own is not enough.</p>	[1]
	(ii)	<p>Compare the changes in Bangladesh with those in Pakistan and India between 1990 and 2015.</p> <p>In 1990 Bangladesh and Pakistan had the same IMR/India had a lower rate/Bangladesh has reduced more rapidly than Pakistan/though gap is predicted to reduce (or decline) after 2008/during 2005 Bangladesh's rate fell below India's/Bangladesh rate fell faster than other two/all 3 predicted to decrease.</p>	[4]

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	(iii)	<p>Suggest two reasons for the predicted changes to Bangladesh's infant mortality rate between 2008 and 2015.</p> <p>Improved health care/improved sanitation/increased literacy/fewer children per woman so concentrate attention on fewer children/better education or greater awareness/better diet for mothers and - or children/late marriages/treatments for water borne diseases</p>	
	(iv)	<p>Infant mortality rate is an example of a 'human development indicator'. Name two other examples of human development indicators.</p> <p>Literacy rate/life expectancy/numbers of doctors or nurses per 100 000 people/maternal mortality/access to clean water/access to improved sanitation/proportions living on less than \$1 per day, etc. Accept GNP.</p>	2k
	(b) (i)	<p>Describe how Bangladesh's <i>public health</i> system has helped to improve the infant mortality rate up to 2008.</p> <p>Health and family care centres in majority of unions/<i>there is a national system of health care</i>/programme of building health complexes in each upzilla/extend plans for health complexes to include rural areas/hospitals for each district/inoculation or vaccination programmes to protect against common diseases/vitamin and or mineral provision/accept reference to advice or support. 4 × 1 but give development marks for detail and-or links between 'system' and effects. Answers must focus on IMR.</p>	[4]
	(ii)	<p>Describe the role of <i>Non-Governmental Organisations (NGOs)</i> in providing health care in Bangladesh.</p> <p>Making treatments and medicines available which are not funded by state or to areas not covered by state/mostly involved with primary health care/BRAC and oral rehydration projects/health and nutrition projects/training of teenage girls to be health cadres/oral rehydration treatment for diarrhoea/allow reference to water or sanitation for max 1/inoculations 4 × 1 but give development marks for detail and/or links between 'system' and effects. Answers here can refer to any aspects of health care</p>	[4]
	(c)	<p>Study Fig.9, which shows percentages of people in Bangladesh with access to safe drinking water and improved sanitation facilities.</p>	
		<p>For both drinking water and sanitation, how did access change in:</p> <p>(i) urban areas?</p> <p>Reduced/got worse for both water and sanitation. 1 × 1</p> <p>(ii) rural areas?</p> <p>Access to drinking water reduced or got worse/but access to improved sanitation improved or got better. 2 × 1</p>	[3]

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(d)	<p>Study the two statements below:</p> <p>A 'The best way to improve the health of people in Bangladesh is to improve clean water supplies and sanitation facilities.'</p> <p>B 'The best way to improve the health of people in Bangladesh is to increase the number of good health care centres.'</p>	
(i)	<p>Give one piece of evidence which supports statement A.</p> <p>Clean water reduces risk of being infected by water borne diseases <i>or specific example e.g. cholera</i>/better sanitation reduces spread of disease/diarrhoea is major problem for young children/infections spread by poor sanitation/improved sanitation in rural areas linked to reduction/credit reference to prevention of disease, infant mortality, etc.</p>	[1]
(ii)	<p>Give one piece of evidence which supports statement B.</p> <p>People still become ill and need treatment/health centres help to spread health education/rural areas have benefited from health centres even though access to clean water has got worse/rapid urban growth makes provision of water and sanitation difficult, etc.</p>	[1]
(iii)	<p>What do you think is the best way to improve people's health? Give reasons for your answer.</p> <p>No marks for yes or no but for giving reasons Most answers will refer to health, clean water and sanitation as being closely linked. Credit will be given for showing how they are linked (using possible points listed above). Accept reference to relative costs.</p>	[3]