

CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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- 1 (a) **Study the map of Bangladesh (Fig. 1) and name the following features:**
 area A – Sundarbans
 river B – Padma/Ganges
 main crop grown in area C – tea
 power generated at D – HEP
 hills E – Chitagong/Bandarban Hill Tracts (5 @ 1 mark each) [5]
- (b) (i) **Using Fig. 2, describe the distribution of arsenic pollution levels in Bangladesh.**
- | | |
|-----------------|--|
| 0–50ppb/low – | S-E/Chittagong area, N-W/Rangpur, Dinajpur, etc., central area/Gazipur, Dhaka, S/centre of coast/Bhola, Patuakhali, etc. |
| 50–500ppb – | N-E/Sylhet, etc., across to western border/Tangail, Rajshahi, etc., E/Comilla, others – Khulna, Narail |
| 500–1000ppb – | western side/Jessore, Magura, etc., S/central/Barisal, Chandur etc. |
| +1000ppb/high – | scattered, S-W/Bramanbari, Nawaganj, Pabna, Faridpur, Noakhall, Feni, Khulna |
- Max 2 marks per contamination level – name of area, compass direction or locational point. [4]
- (ii) **Explain how groundwater becomes polluted with arsenic.**
 withdrawal from tubewells for irrigation
 lowered water level
 oxygen moves into space
 reacts with arsenic in rocks
 enter water system (2 @ 1 mark) [2]
- (iii) **What effects does arsenic pollution have on the people who drink the water?**
 arsenicosis
 dark/white patches
 hard patches on skin
 cancer of liver/kidneys
 death/fatal (2 @ 1 mark) [2]
- (c) (i) **What is the highest temperature?**
 28–30 °C [1]
- (ii) **Which month has the lowest temperature?**
 January [1]
- (iii) **What is the highest rainfall?**
 385 mm (380–390 mm) [1]
- (iv) **Which month has the lowest rainfall?**
 December [1]
- (v) **Explain why there are seasonal variations in the climate.**
 seasonal monsoon winds/changing wind directions
 NE monsoon/November–February – blow from high pressure over Asia to low pressure over Indian Ocean
 deflected to right/Coriolis effect
 SW monsoon/June–September – blow from high pressure over Australia to low pressure over Asia

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pick up moisture from sea/onshore winds

(3 @ 1)

- (d) (i) **A 'The climate of Bangladesh is ideal for growing crops.'**
B 'Many problems are caused for farmers by Bangladesh's climate.'

Give one piece of evidence which supports statement A.

Must have a link to the growing of crops

warm temperatures for sowing

length of growing season

monsoon rain/plentiful rainfall for germination/growing

sunny spells for ripening

dry spell for harvesting

very productive/list of crops that grow well

[1]

- (ii) **Give one piece of evidence which supports statement B.**

flooding caused by heavy monsoon rains/excessive rainfall

damages crop

washes away fertile soil

drought/dry period

scarcity of surfaced water

high temperatures – melts snows in mountains = flooding

[1]

- (iii) **Which statement do you agree with the most? Give reasons for your answer.**

Points can be taken from those in (i) and (ii) and developed.

No marks for stating A or B, only for reasons

Accept answers that support both statements

[3]

[Total: 25]

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- 2 (a) (i) **Study Photograph A on the Insert, a satellite image of part of the Padma (Ganges) delta.**
Describe the river features seen in the photograph.
meanders/curves/bends
braiding/channels split
islands/chars
wide and narrow channels
confluences
distributaries
sediment/alluvium/deposition
tributaries
sand bars
floodplain (4 @ 1 mark) [4]
- (ii) **Explain how a delta, such as the Padma (Ganges), is formed.**
heavy load carried by river
river's speed checked (as it enters the sea)/slows
load deposited
no currents/strong tides to remove deposition
salt water/causes fine mud to coagulate/suspended
accumulates over time/builds up
distributaries branch out
advances seaward
deposition off-shore/out at sea (4 @ 1 mark) [4]
- (b) (i) **Describe the location of areas affected by drought and coastal floods.**
drought – western side
N-W
mainly north of Padma River
smaller scattered areas to south of river
S-W – strips
accept one named area e.g. Rajshahi, Natore, Jessore, Nawabganj, Nagaour
coastal floods – to the south
on eastern coast
on islands of Ganges
Bay of Bengal
accept one named area e.g. Cox's Bazaar, Chittagong, Noakhali, Bhola, Khulna, etc.
Reserve 1 mark for each of drought and coastal floods (4 @ 1 mark) [4]

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(ii) **Explain how coastal floods are caused.**

cyclones/tropical storms
 storm surges
 strong/fast winds
 coincide with high tides
 raise waves to great heights
 wall of water sweeps over land
 funnels through Bay of Bengal
 water shallower towards coast
 tsunami
 high temperatures – water expands

(4 @ 1 mark) [4]

(iii) **What can people and organisations do to limit the damage caused by coastal floods?**

evacuation
 warning system
 education/awareness re. cyclone risk
 cyclone shelters
 plant mangroves
 earth embankments/flood bank/barrages/sluice gates
 raise buildings
 supply of clean water to prevent disease
 medical teams/mobile hospitals

(4 @ 1 mark) [4]

(c) (i) **A 'Climate change is causing heavier and more erratic rainfall.'**
B 'Climate change is causing less rainfall.'

Give one piece of evidence which supports statement A.

increasing frequency of tropical storms
 heavier monsoons
 late arrival of rains
 more floods
 changing temperatures cause rainfall patterns to alter/become erratic
 increased heating – increased evaporation – increased rainfall

[1]

(ii) **Give one piece of evidence which supports statement B.**

increasing drought/water shortage
 changing temperatures cause rainfall patterns to alter
 higher temperatures reduce condensation – less rainfall

[1]

(iii) **In your opinion, which pattern of climate change poses the greater threat to Bangladesh, A or B? Give reasons for your answer.**

Points can be taken from those in (i) or (ii) and developed
 No marks for stating A or B, only for reasons
 Accept answers that support both statements
 Threats e.g. crops/livestock destroyed/lack of food/loss of life/communications disrupted/harms economy/GDP
 Credit references to different areas affected in different ways

[3]

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- 3 (a) (i) **Aquaculture is also known as the Blue Revolution. What is aquaculture?**
 fish farming/cultivation/rearing
 use of ponds, tanks, lagoons, etc. to rear fish
 use of breeding techniques, nutritious feed, research, etc. (2 @ 1 mark) [2]
- (ii) **Using Fig. 5, describe the general trends in aquaculture production in Bangladesh.**
 general mark for increase
 increase from 50 000–940 000/by 890 000 tonnes
 flat/constant 1970–75
 low/steady increase 1970–1985
 rise in 1985–1987 then steady increase
 very rapid/steep increase 1995–2004
 decline 2004
 static 2006
 sharp rise to 2007
 Max 1 mark for use of figures (4 @ 1 mark) [4]
- (iii) **Why is aquaculture important to the people of Bangladesh?**
 increase in fish types available
 price of fish reduced
 supplements diet/source of food
 provides protein
 rotation with agriculture/rice in tidal and mangrove areas when floods
 increase fish production
 export earnings
 provides jobs/employment/living
 provides income
 sustainable (3 @ 1 mark) [3]
- (b) (i) **What is meant by ‘sustainable development’?**
 to meet needs of generation whilst preserving resources for future generations
 careful use of resources
 not causing damage
- (ii) **Explain how the sustainable development of natural resources, such as forests, can be achieved?**
 forests – use of biogas/biomass so trees not cut down
 other building materials used
 reforestation
 afforestation
 controlled logging/use of licences/limits imposed
 conservation
 fish – Restocking
 quotas allotted
 aquaculture
 energy – use of HEP not fossil fuels
 renewable power – wind, solar, etc.
 education/awareness
 Other examples may be used (ecotourism, recycling) (3 @ 1 mark) [3]

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- (c) (i) **Using Fig. 6, describe the changes in coal production between 2002 and 2009.**
 general mark for increase
 from 0–920 000 short tons
 no coal production til 2004
 small/slow production to 2005/0–480 000
 rapid/steep increase to 2006
 decline to 2007/to 380 000
 then rapid increase to 2008/to 920 000
 stable 2008 to 2009
- Max 2 marks for use of figures (4 @ 1 mark) [4]
- (ii) **How can the use of coal help to reduce deforestation?**
 use in industry (instead of charcoal)
 example of industry – brickworks, cement, etc.
 for power instead of fuelwood
 energy for steam trains instead of wood
 less need for wood (2 @ 1 mark) [2]
- (d) (i) **There were many differing opinions when it was proposed to open a new coal mine at Phulbari.**
local farmer – I do not want to lose my home and fields to a coal mine
government official – Coal under the ground is worth more than growing rice on the surface.
- Give one piece of evidence in support of the farmer**
 knows no other job/only way to support family
 heritage and culture destroyed/traditional
 friends/family nearby
 becomes landless
 source of food and income
 destroy fertile land
 finite – what happens after it is used? [1]
- (ii) **Give one piece of evidence in support of the government official.**
 need coal for industry
 for generating electricity
 can be exported/foreign earnings/GDP
 provides jobs for villagers
 encourage other industries to area
 reduce import bill [1]
- (iii) **Which opinion do you agree with the most? Give reasons for your answer.**
 Points can be taken from those in (i) and (ii) and developed.
 To reflect opinions given – not environmental damage
 No marks for stating A or B, only for reasons
 Accept answers that support both statements [3]

[Total: 25]

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4 (a) (i) Using Fig. 7, compare the production of wheat and pulses, noting the differences and similarities.

- both fluctuated
- wheat always higher
- pulses declined/wheat has had a general increase
- wheat increased by 300 000 mt/pulses declined by 200 000 mt
- both increased until 1992/93
- wheat rapid decrease
- pulses continued decline/wheat fluctuated
- highest for wheat and pulses
- lowest for wheat and pulses

Max 2 marks for use of figures

(4 @ 1 mark) [4]

(ii) Explain how technological advances, such as the Green Revolution, may have caused the changes in wheat production between 1989 and 1999.

- HYVs – to increase yield/double cropping
- disease resistant
- genetically engineered to cope with climatic conditions
- Fertilisers – improves quality of soil
- maintains fertility – no fallow period
- faster production
- Pesticides – to protect from loss of crop (by insect attack)
- Herbicides to prevent growth of weeds/taking nutrients from crop
- Irrigation stabilise water requirements
- healthier growth
- Machinery save time
- less wastage

(4 @ 1 mark) [4]

(b) Explain how the farmers can grow crops in the infertile sand.

- small hole/pit dug
- line with jute/sack
- fill with compost
- provide nitrates, phosphates, minerals
- plant seeds
- harvest/reap/pick crops

Allow development

(4 @ 1 mark) [4]

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(c) Complete the table below to compare a cottage industry and a large-scale industry

	<u>cottage industry</u>	<u>large scale industry</u>	
example	weaving, handicrafts, pottery	jute, textiles, sugar, garments, furniture, paper mills, etc	[2]
labour	family/few workers low wages	more than 10 workers higher wages skilled	[2]
machinery	simple/traditional technology	sophisticated, expensive, automated	[2]
export and earnings	little export, low earnings, 20% value	high export, 80%value foreign exchange	[2]

1 mark per type of industry for each category 8 × 1 mark

(d) (i) **A ‘It is important to encourage more cottage industries to reduce unemployment.’**
B ‘Investing in large-scale industries is necessary for Bangladesh’s continuing development.’

Give one piece of evidence which supports statement A.

- small scale
- employs many people/reduces unemployment
- supplements agriculture
- employment for women
- no education necessary
- traditional/simple skills
- limited outlay/cost/capital
- 80% employment but only 20% value of output

[1]

(ii) **Give one piece of evidence which supports statement B.**

- 15% employment but 80% value of output – raises GDP
- higher profits
- exportable
- earnings/foreign exchange – to reinvest
- higher wages – less poverty
- reduces needs for imports
- attracts foreign investment

[1]

(iii) **In your opinion, which statement will be the more beneficial to Bangladesh? Give reasons for your answer.**

- Points can be taken from those in (i) and (ii) and developed
- No marks for stating A or B, only for reasons
- Accept answers that support both statements

[3]

[Total: 25]

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- 5 (a) (i) **On Fig. 9 complete the bar for 2009 when 73% lived in rural areas and 27% in urban areas.**
 1 mark for correct positioning of line
 1 mark for correct shading, even if line incorrect
- (ii) **What does Fig. 9 show about the changes to rural and urban populations in Bangladesh?**
 less in rural/more in urban
- (iii) **What are the effects in rural and urban areas of the changes shown in Fig. 9?**
 rural – less working population
 old and very young left
 less crop production/less fish caught
 children need to help – less time to go to school
 family bonds broken
 deserted/rundown/under developed
 urban – pressure on/lack of infrastructure/water, sanitation, waste disposal
 limited accommodation, more slums/shanties
 pressure on services/health care, education, etc.
 more labour – leads to more unemployment
 crime rates increase
- Reserve 1 mark for each rural and urban [4]
- (b) (i) **Using Fig. 10, describe the changes that took place in each age group between 1979 and 2009.**
 0–14 years – decreased
 15–64 years – increased
 65+ years – increased
- 1 mark per age group [3]
- (ii) **Explain how improvements in health care have led to changes in the 0–14 years age group that you described in (b)(i).**
 lower death rate/IMR – less need to have many children
 education/awareness re. nutrition/family planning/vaccination
 immunisation/vaccination schemes for children/proper treatment
 family planning/contraception
 NGOs provision of health care to poor
 disease control programmes – TB, diarrhoea
 improved maternal care (3 @ 1 mark) [3]
- (iii) **Give one reason for the change in the 65+ age group.**
 longer life expectancy/lower death rate/better health care, nutrition, etc. [1]

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- (c) (i) **Using Fig. 11, describe how the % of children in secondary schools in Bangladesh changed compared to India and Pakistan.**
 greater increase than both India and Pakistan
 30% cf 25%, 10%
 nearly as much as India/closing the gap
 nearly twice as many as Pakistan
 allow description of changes = 1 (3 @ 1 mark) [3]
- (ii) **The % of children in primary schools is 95% in Bangladesh. Why is there such a decrease when children go to secondary school?**
 need of children to work – to support themselves/family
 poverty – not afford to send to school
 problem re-educating girls (2 @ 1 mark) [2]
- (iii) **Why is secondary education important?**
 training next generation of workers/skilled workers
 higher levels of literacy and numeracy
 for more demanding jobs/better jobs/use of technology
 higher wages
 go onto tertiary education – specialisations for economy
 awareness of family planning (2 @ 1 mark) [2]
- (d) **‘Developing occupational skills is more important than university qualifications for the economic development of Bangladesh.’**
How far do you agree with this statement? Give reasons for your answer and examples where possible.
 TVET related to needs of industry/agriculture unlike some degrees
 not seen as prestigious as a degree
 accessible by poorer students
 accessible at secondary and tertiary level
 more immediate effect on earnings/good wages
 occupational skills have greater effect on GDP/economic growth
- teacher training, livestock, pisciculture, poultry farming, tailoring, sewing, carpentry, electrical repairs and maintenance, etc.
- Only mark reasons, not degree of agreement
 Allow development
 Reserve 1 mark for examples of types of training/occupations to max 2
 Accept answers that support both points of view [4]

[Total: 25]