

**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 mark) [3]

- (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% lived in urban areas.**  
 1 mark for correct positioning of line  
 1 mark for correct shading, even if line incorrect [2]
- (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]