



Cambridge Assessment International Education
Cambridge Ordinary Level

BANGLADESH STUDIES

7094/02

Paper 2 Environment and Development of Bangladesh

May/June 2018

MARK SCHEME

Maximum Mark: 75

Published

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This document consists of **15** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Answer **three** questions.

Question	Answer	Marks
1(a)(i)	Study Fig. 1.1, a map of Bangladesh. Name the following features: city A; Chittagong	1
1(a)(ii)	river B; Padma / Ganges-Padma	1
1(a)(iii)	the hazard shown on the map; Cyclone / storm surge / coastal flooding / tidal flooding	1
1(a)(iv)	the energy source shown on the map; (Natural) gas	1
1(a)(v)	the main cash crop shown on the map. Tea	1
1(b)(i)	Study Figs. 1.2 and 1.3, which show how vegetation and valley side steepness can affect a river's discharge after heavy rainfall. In Fig. 1.2, which area causes the highest river discharge? Deforested	1
1(b)(ii)	In Fig. 1.3, which slope causes the highest river discharge? Steep	1
1(b)(iii)	How does the river discharge of a valley with steep sides differ from a valley with gentle sides? Starts at a lower level Rises more quickly Rises to a higher peak / <u>higher</u> discharge Falls more quickly	2
1(b)(iv)	Explain how deforestation causes flooding. Deforestation reduces interception Less vegetation to take up water Less transpiration Fewer roots to stabilise soil Less infiltration Increased overland flow / surface run off Soil erodes into channel Channel becomes shallower / sedimentation	4

Question	Answer	Marks
1(b)(v)	Describe and explain two <u>other</u> factors which cause flooding in Bangladesh. Cyclones, drive up water level, storm surge Low-lying land, water overflows easily Melt water from the Himalayas, increased run off Heavy / monsoon rains, rain reaches channel quickly Increasing urban areas, less interception 2 + 2 or 1 + 3	4
1(c)	Draw and label a diagram to explain the formation of thunderstorm rainfall. On hot humid days Sun heats ground Air near earth's surface / ground heated Warm (moist) air rises Rising air cools Condensation / clouds form Large cumulonimbus clouds Results in <u>heavy</u> rainfall If no diagram, max 2 marks	3
1(d)(i)	There are many differing opinions about how to deal with flooding in Bangladesh. Below are two different views. Local resident: 'We need more food aid and water purification tablets now.' Government official: 'Longer term plans such as new dams and more flood warnings are important.' Give <u>one</u> piece of evidence in support of the local resident. Short-term needs must be met to save lives People need clean water to survive People need food to survive Flooding leads to waterborne diseases Emergency relief is needed immediately	1
1(d)(ii)	Give <u>one</u> piece of evidence in support of the government official. Investment in longer term plans would reduce frequent spending on short-term measures. Building dams would mean the flow could be controlled, so prevent flooding. More flood warnings would enable evacuation and prevent loss of life.	1

Question	Answer	Marks
1(d)(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 further. No marks for stating local resident or government official, only for giving reasons. Credit reasons for accepting one and rejecting the other. Accept answers that give support to both statements. Other ideas include: Short-term vs. long-term gain Bangladesh does not have much money to spend on flood defences / dams Most people in Bangladesh do not earn enough to pay for insurance against flooding, so when there are floods, they risk losing everything Dams take a long time to build Flood warnings are not always successful and do not always help enough people In 2007, flooding made 9 million people homeless and approximately 1000 people died from drowning and from waterborne diseases <u>Short-term responses</u> Food aid from the Government and other countries Water purification tablets People repaired embankments and helped to rescue people Free seed given to farmers <u>Long-term responses</u> Building embankments Building raised flood shelters Introducing flood warning systems Emergency planning Dams planned Reducing deforestation	3
2(a)(i)	Study Fig. 2.1, which is an article on hydro-electric power. Using Fig. 2.1, describe <u>two</u> advantages for Bangladesh of investing in the hydro-electric power project. Better international relations (between Bangladesh and Bhutan and India) Increasing energy (to meet increasing demand) Helps Bangladesh to become middle income country	2
2(a)(ii)	Label the diagram to show the physical factors required by the hydro-electric power station. A = <u>heavy</u> rainfall B = hilly topography / steep slopes C = fast flowing river / high river flow / constant river flow D = away from settlement / to supply electricity	4

Question	Answer	Marks
2(b)(i)	The main energy used in rural industries and homes in Bangladesh is biomass. Name <u>two</u> sources of biomass. Wood Dry leaves Sawdust Dung Crop residue / agro waste / rice husk / jute stick / sugar-cane bagasse Biogas	2
2(b)(ii)	What are the <u>disadvantages</u> of using biomass in rural areas? Deforestation + one development, e.g. threat to ecological balance Atmospheric pollution + development, e.g. greenhouse gases Lack of cow dung for fertilizer Need large number of cattle to supply one family (idea) / not very efficient Poisonous fumes (domestic)	3
2(c)(i)	What is sustainable development? Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs	1
2(c)(ii)	Study Fig. 2.2, which shows sources of water in urban areas in Bangladesh. <u>On Fig. 2.2</u>, complete the graph using the following figures: • tube wells – 68% • piped inside dwelling – 24% • piped outside dwelling – 8% Lines correctly plotted 1 mark. All sectors correctly shaded 1 mark.	2
2(c)(iii)	Describe <u>two</u> domestic uses of water. Washing clothes Drinking water Cooking Cleaning home Personal hygiene	2

Question	Answer	Marks
2(c)(iv)	Explain <u>two</u> ways in which Bangladesh has improved its domestic water supply. Allow points about increased or improved water supply. Legislation / government action Piped water / WASA More tube wells Dams and reservoirs Tunnels and waterways Deep-bore wells / >150 m Household arsenic filters / free water filters from charities Water purification plants Rainwater collection International agreements etc. 2 + 2 or 1 + 3	4
2(d)(i)	Study the two statements below. A ‘Providing clean water for everybody remains the main priority for Bangladesh.’ B ‘Continuing to control air quality remains the main priority for Bangladesh.’ Give <u>one</u> piece of evidence which supports statement A. Polluted water causes health problems Surface water is polluted by household and industrial waste, as well as by chemicals used in agriculture When acid rain falls, it pollutes the water bodies Arsenic contamination is thought to be one of the largest sources of water pollution in Bangladesh Water pollution leads to many health problems such as diarrhoea and arsenicosis	1
2(d)(ii)	Give <u>one</u> piece of evidence which supports statement B. Air pollution causes health problems Vehicles throughout the country contribute to air pollution, especially two-stroke engines The use of leaded petrol has led to a huge amount of lead building up in the streets. Dhaka has a very high concentration of lead, about 463 nanograms per cubic metre of air. Affects brain development in children Increase of acid rain Could look at problems caused by air pollution, e.g. asthma, lung disease, etc.	1

Question	Answer	Marks
2(d)(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 further. No marks for stating A or B, only for giving reasons. Credit reasons for accepting one and rejecting the other. Accept answers that give support to both statements. Answers could focus on the growing size of the problem, the sources, the issues of management, and/or the health problems caused.	3

Question	Answer	Marks
3(a)(i)	Study Table 3.1, which shows some indicators of development in three countries. Using Table 3.1: identify the country which has the highest life expectancy; Bangladesh	1
3(a)(ii)	identify the country which is likely to have poor access to a doctor; Myanmar	1
3(a)(iii)	explain why it is difficult to decide which country in Table 3.1 has the highest level of development; Statistics are averages Statistics may not be accurate or up to date Development is a complicated idea e.g. Myanmar is high for some indicators and not for others Only some indicators are shown Difficulty of gaining accurate and up-to-date statistics Areas vary within countries Credit use of data from table. Max. 4 for different comparative statements. e.g. Bangladesh has lowest GDP but high life expectancy Allow development marks.	4
3(a)(iv)	name one <u>other</u> indicator which can be used to measure a country's development. Name of any other development indicator, e.g. birth rate, adult literacy, GNI.	1

Question	Answer	Marks
3(b)	Explain <u>two</u> ways in which Bangladesh is continuing to improve education within the country. Increasing public spending on education Investment in higher education Improving student / teacher ratios Increasing enrolment in primary schools, especially in poor and rural areas Scholarships for poor students Private schools receiving government subsidies Flexibly timed non-formal programmes, for children who work Greater participation by girls – more female teachers, community mobilisation schemes NGOs provide classrooms in rural areas TVET 2 + 2 or 3 + 1	4
3(c)(i)	Study Fig. 3.1, a graph which shows the detection rate of tuberculosis (TB) in Bangladesh from 2005 to 2015. Describe the main changes in the detection rate from 2005 to 2015. Overall increase from 2005 to 2015 Increase from 2005 to 2006 / 2008 to 2009 Plateau from 2006 to 2008 / 2010 to 2011 Decrease from 2009 to 2010 Increase from 2011 to 2015	3
3(c)(ii)	Using examples, explain how diseases such as tuberculosis (TB), cholera, diarrhoea and malaria can be controlled. Clean water Better sanitation / hygiene Education / awareness about ... Better medical facilities / health care initiatives Immunisation Monitoring / surveillance ORT for diarrhoea Formation of medical teams in times of floods, cyclones, epidemics Temporary mobile hospitals in times of epidemics Insecticide spraying – mosquitoes Drug development / increased use of drugs, e.g. for TB Isoniazid, Rifampicin (Rifadin, Rimactane), Ethambutol (Myambutol) / cheaper drugs Allow development	6

Question	Answer	Marks
3(d)(i)	Study the statement below. ‘More investment in private sector health care is the key to improved health care in Bangladesh.’ Give <u>one</u> piece of evidence which supports the statement. Some private clinics / hospitals may provide better facilities Private sector accounts for 75% of the total spending on health in recent years. This has been actively encouraged by the state Private sector facilities meet the growing demand from people who are able to pay the market price for care and treatment Some personnel, however, work in both private and public sector, so it supplements pay and allows individuals to still work within the public sector	1
3(d)(ii)	Give <u>one</u> piece of evidence which does <u>not</u> support the statement. Some public sector clinics provide better service / treatment Private sector is profit orientated so charges can be high They are not a solution for the care of the majority, who are unable to pay Private sector clinics are mostly in urban areas Private sector clinics and laboratories are often not well controlled or quality controlled and so standards vary Some personnel will move across to private health, resulting in a staff shortage in the public sector	1
3(d)(iii)	How far do you agree with the statement? Give reasons for your answer. Points can be taken from those in (i) and (ii) and developed further. No marks for stating how far you agree. Credit reasons for agreeing or disagreeing with the statement.	3

Question	Answer	Marks
4(a)(i)	Study Fig. 4.1, which shows a statement about agricultural productivity in Bangladesh. Using Fig. 4.1 only, describe <u>two</u> challenges faced by agriculture in Bangladesh. Growing population Shortage of arable land Changing climate Need to diversify agriculture	2
4(a)(ii)	Describe the growing conditions required by rice. Abundant sunshine 20–27 °C Flooded conditions / wet soil / irrigated Medium to high rainfall Clayey loam soil ideally / alluvial soil Flat land Low lying land	3

Question	Answer	Marks
4(a)(iii)	Describe and explain <u>three</u> different ways that Bangladesh has increased its food production. Green revolution HYVs Insecticides / pesticides Fertilisers Irrigation Machinery / tractors Government subsidies More tube wells / lift pumps Polyculture Education / training / advice about ... etc. Allow development marks 2 + 2 + 2 or 1 + 2 + 3	6
4(b)(i)	Study Fig. 4.2 (Insert), a photograph which shows a rural area in Bangladesh. Describe how the land is being used in Fig. 4.2. Mustard / oil seed Honey / bees Arable land / crops Some areas of trees / settlement	2
4(b)(ii)	Suggest <u>three</u> problems faced by farmers in rural areas like the one shown in Fig. 4.2. Remote from market Lack of transport Drought Flood Lack of machinery / technology Pests Lack of land / lack fragmentation Soil fertility Poverty / lack of money / investment Lack of training etc.	3

Question	Answer	Marks
4(c)	In the south of Bangladesh waterways are the main type of transport. What are the advantages and disadvantages of using waterways for transport? <u>Advantages</u> Extensive Environmentally friendly / non-polluting Cheaper Able to transport bulky items <u>Disadvantages</u> Slow Not always connected to other cities Flooding Drought Max. 3 for either advantages or disadvantages.	4
4(d)(i)	Study the two statements below. A ‘Continuing to increase crop yield and type of crop (diversity) is key to the future economic development of Bangladesh.’ B ‘Protecting the environment is key when developing Bangladesh’s agriculture.’ Give <u>one</u> piece of evidence which supports statement A. To meet growing demand for food Increased exports, which increases GDP and means more foreign exchange Decreases need for food imports, makes Bangladesh more self-sufficient The country needs to invest more in research on non-rice crops, livestock, and fishery as well as infrastructure to support the shift towards high-value agriculture	1
4(d)(ii)	Give <u>one</u> piece of evidence which supports statement B. Creating more land for agriculture leads to deforestation Over-irrigation contributes to arsenic contamination Excessive amounts of chemical fertilizers are creating environmental and health hazards Environmental protection is essential to make agriculture sustainable	1
4(d)(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 further. No marks for stating A or B, only for giving reasons. Credit reasons for accepting one and rejecting the other. Accept answers that give support to both statements.	3

Question	Answer	Marks
5(a)(i)	Study Fig. 5.1 (Insert), a photograph which shows a cottage industry in Bangladesh. Which cottage industry is shown in Fig. 5.1? Dying cloth Silk Textiles Thread making	1
5(a)(ii)	Name three <u>other</u> types of cottage industry. Handicrafts / arts and crafts Metalwork Jewellery making Leather goods Pottery Furniture making Ornament making Paper recycling Bamboo working Handloom weaving / Jamani Jute baskets Nakshi Katha / embroidery	3
5(a)(iii)	Describe how the cottage industry differs from large-scale industry in Bangladesh. Statements relating to: Value of output Productivity Wages Machinery / technology Export Profits Size of labour force Capital / setting up costs Ownership Raw materials Credit development	5
5(b)(i)	What is meant by the term ‘informal sector’? Grey economy No taxes paid Not regulated by government	1

Question	Answer	Marks
5(b)(ii)	In Bangladesh, nearly 90% of the total number of jobs are in the informal sector. Explain why so many people work in the informal sector. Poverty Farms small, so low output Lack of formal jobs Poor cannot afford to be unemployed / to support family / to live Allows employment Family tradition Lack of qualifications / education Lack of skills / training Little input / capital / investment required No legal formalities / no tax Work whenever you want / own boss Adaptable employment at different locations, e.g. beach vendor, urban street seller, etc.	5
5(c)(i)	Study Fig. 5.2, a graph showing the percentage of population with access to electricity and the percentage of electricity obtained from renewable sources. On Fig. 5.2, complete the bar graph for Myanmar using the following figures: • % access to electricity – 52% • % electricity from renewable sources – 79% 1 mark for each bar correctly drawn and shaded.	2
5(c)(ii)	Using Fig. 5.2, compare percentage access to electricity and electricity from renewable sources in Bangladesh with that in India and Myanmar. Bangladesh in middle for access to electricity Bangladesh equal lowest with India for access to renewable Bangladesh less % access to electricity than India Bangladesh more % access to electricity than Myanmar Bangladesh same % from renewables as India Bangladesh less % from renewables than Myanmar / approx. half For info: Bangladesh 59% 38% India 79% 38% Myanmar 52% 79%	3

Question	Answer	Marks
5(d)(i)	Study the two statements below. A ‘Supporting cottage industries and small-scale industries is key to further reducing poverty in Bangladesh.’ B ‘Improving roads and electricity provision in rural areas is key to further reducing poverty in Bangladesh.’ Give <u>one</u> piece of evidence which supports statement A. Investing in and supporting small-scale industries provides vital employment opportunities and so reduces poverty For many poor people, this is a way to support themselves It is better to employ more people at low wages in cottage industries than increase output in large-scale industries with fewer people Large numbers of people work in small-scale industries	1
5(d)(ii)	Give <u>one</u> piece of evidence which supports statement B. Many rural areas lack good roads and electricity Allows development of industries in rural areas Improves access to markets, which increases trade, increases income	1
5(d)(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 further. No marks for stating A or B, only for giving reasons. Credit reasons for accepting one and rejecting the other. Accept answers that give support to both statements.	3