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2012 Geography

Higher Paper 2

Finalised Marking Instructions

Instructions to Markers: General Notes

Procedure before Markers' Meeting

You are asked to make yourself familiar with the question paper and the marking instructions. Marking of scripts at this stage should be only tentative and none should be finalised or returned. Please note any point of difficulty for discussion at the meeting.

Marking

1   The maximum mark for Paper 2 is 100. Markers are encouraged to use the whole range of marks and to give a high assessment for an answer of high quality.

2   The total marks assigned by you for each complete question should be entered in the outer right-hand margin of the answer book. When a question consists of more than one part, the marks assigned to each part MUST BE SHOWN SEPARATELY in the column provided on the inner right-hand side of the book.

        It is of great importance that the utmost care should be exercised in adding up the marks. Where appropriate, all summations for totals and grand totals must be carefully checked. Where a candidate has scored zero marks for any question attempted "0" should be shown against the answer.

        The TOTAL mark for the paper should be recorded in the box at the top right-hand corner on the front cover of the script.

3   It is helpful in later procedures if points receiving marks are clearly indicated. In general a mark should be awarded for a correct statement.

4   All mistakes MUST be underlined in red pen. A wavy line (~~~~~~) should be used for something that is not quite right, a single line (-------) for mistakes which, though not very serious, are undoubtedly wrong, and a double line (=======) for gross blunders. These corrections are valuable when borderline cases and appeals are being considered. Where a page shows neither a correction nor a mark, a red tick MUST be placed at the bottom right-hand corner.

5   The marker should take the candidate's answers strictly as they are written; no attempt should be made to read into answers ideas which the candidate may have intended to convey but which have not been successfully conveyed. A caret (λ) should be used to indicate an important omission. A question mark (?) should be used to indicate that the marker cannot understand the meaning intended. The letter "R" should be used to indicate that the candidate is repeating something already stated in the answer.

6   Care should be taken that no credit whatsoever is given to irrelevant parts of answers, however accurate the irrelevant passages may be. Irrelevant passages should be square-bracketed [ ].

        It should be noted, however, that a fact or argument which is irrelevant in one candidate's answer may be made quite relevant by another candidate who has the ability to connect it to the question.

Question 1 (Rural Land Resources)

(a) **Assess out of 20.**
Well annotated diagrams could be awarded full credit. Although unlikely, if an answer does not have any diagram then mark out of 16. Credit named examples up to 4 marks; one per feature. Award a maximum of 2 marks for list of unexplained processes. Candidates should refer to surface and underground features for full marks, such as:

- limestone pavements
- sink/swallow/potholes
- dolines/shakeholes
- disappearing/resurgent streams
- dry valleys
- gorges
- scars and scree
- caverns
- stalagmites, stalactites, pillars.

Appropriate explanations should be provided for the formation of the features eg for a limestone pavement:

- limestone is a sedimentary rock laid down in layers (separated by bedding planes) under a tropical sea
- plate tectonics have raised the limestone while folding and faulting have resulted in joints (through pressure release)
- glacial erosion has scraped clear the overlying soil and exposed the limestone
- the joints/bedding planes are lines of weakness that can be enlarged due to the action of chemical weathering
- rainfall is a weak acid (carbonic acid) and the limestone (calcium carbonate) can therefore be dissolved by this rainwater
- this leads to deep gaps (grykes) and raised blocks (clints) in the exposed plateau or limestone pavement. **20 marks**

(b) **Assess out of 10**
Candidates must discuss at least two land uses to achieve full marks (not just tourism/recreation). Award a maximum of 7 marks for any one opportunity. Allow up to 3 marks for specific named examples not already credited. Ideally candidates should identify the specific feature of the landscape and then go on to explain the opportunity it provides ie White Scar Caves and the guided tours, gift shop and café that are provided for tourists in the Ingleton area and the resulting jobs and money brought into the local economy.

Responses will vary according to the area chosen but opportunities might include:

Social – tourism, recreation, nature conservation.
Economic – farming, forestry, water supply, energy generation, quarrying. **10 marks**

(c)   **Award up to 4 marks throughout part (c) for specific named locations of conflicts or problems within an upland area not already credited.**

(i)   **Assess out of 10.**
A maximum of 6 marks if only one conflict discussed.

Environmental conflicts in upland landscape usually include:

- air and noise pollution from traffic, quarrying…
- traffic congestion, heavy traffic damaging roads…
- erosion of footpaths, damage to fences and walls, litter…
- water pollution
- visual pollution from wind farms, ski-lifts/funicular railway, car parks, new buildings…
- impact on wildlife eg geese migration
- impact on tourism eg overhead Beauly to Denny power line   **10 marks**

(ii)   **Assess out of 10.**
Precise points will obviously depend on the area chosen. Over generalised 'non-authentic' answers ie without place names, should score a maximum of 7 marks. To gain full marks candidates must comment on the effectiveness of their solutions/measures taken to resolve environmental conflicts. Award a maximum of 8 if there is no comment on effectiveness.

Measures taken to resolve environmental conflicts might include:

- traffic restrictions in more favoured areas/at specific peak times eg one-way systems, bypasses or complete closures
- encouraging the use of public transport eg park and ride, minibuses, the use of alternative transport eg cycle paths and bridle ways
- separating local and tourist traffic, the use of permits (for access or parking) in some areas
- attempting to develop wider spread of 'honeypot' areas
- screening new buildings, car parks etc behind trees and only using local stone for buildings
- better visitor education
- burying power lines/development of off-shore energy production   **10 marks**

Question 2 (Rural Land Degradation)

(a) **Assess out of 10 marks, with up to 6 marks for description, including up to 3 marks for appropriate use of statistics from map and graphs.**

Candidate descriptions may include:

- high temperatures throughout the year – all stations have daily maximum temperatures above 30⁰C all year, rising to 44⁰C in Tombouctou in June
- isohyets show desert or semi-desert precipitation figures for much of northern Mali, with long dry periods from October to May
- even in south where precipitation is > 1000mm, there is little rainfall in winter
- as much of the country is desert or semi-desert, highly variable annual rainfall can also be assumed.

Candidates should **explain** why these climate patterns lead to the degradation of rural land. Points would include soil erosion from wind and infrequent and often heavy rainfall and impact of drought and desertification on vegetation. **10 marks**

(b) **Assess out of 20. Award a maximum of 6 for any one cause. Avoid double credit for similar points made for each of the four chosen causes across the study areas. Award up to 4 marks for specific names within case study areas.**

North America – most likely area Great Plains
For **Monoculture** – the growing of vast areas of wheat or cotton to supply worldwide demand stripped the land of the same nutrients year after year. This led to a decrease in fertility and moisture content and eventually a breakdown in the soil structure, leading to land degradation.
For **Farming marginal land** – ploughing of marginal land in the western plains during wet years left the soil fragile during dry years. Overgrazing of land by vast herds of cattle as demand for beef increased. Land became dry and compacted and vulnerable to wind and water erosion.

Africa north of the Equator – the Sahel
For **Deforestation** – rural-urban migration has led to a growing demand for wood for fuel.
Trees are already scarce in the area and further deforestation reduces interception and water storage leaving the soil dry and vulnerable to wind and water erosion.
For **Population increase** – desertification has caused people to migrate southwards within the Sahel leading to increasing population and increased pressure on already fragile land.
Also many nomads have been forced to settle in villages, leading to greater food requirements and overuse of marginal land.

The Amazon Basin
For **Mining** – there are large deposits of gold, bauxite, iron ore, tin ore and diamonds in the Amazon Basin. In order to extract these minerals, large areas of the forest have been cleared. For instance, about one-sixth of Brazil's tropical rainforest (900,000 km^2) has been cleared to mine the high quality iron ore found there. These mining activities have caused irreparable damage to large areas of land with gold mining methods poisoning soil and rivers. Tin miners rely heavily on hydraulic mining techniques, blasting away at river banks with high-powered water cannons and clearing forests to expose potential tin deposits, leaving land totally degraded.

For **HEP** – The great rivers of the Amazon basin have a huge potential energy in the form of hydro-electric power. The Brazilian government had built 31 dams in the Amazon region by 2010. The amount of irreversible environmental damage they cause is huge. After the dam is built, the land slowly floods, driving the native Indians away from the river and eventually drowning their village and destroying the entire forest in the valley, endangering animal and plant species, sometimes making them extinct.   **20 marks**

(c) **Assess out of 20. Award a maximum of 6 for any one conservation strategy. Avoid double credit for similar points made for each of the chosen strategies across the study areas. Award up to 4 marks for specific names within case study areas not already credited. Award a maximum of 16 if there is no comment on effectiveness.**

North America – most likely TVA area or Dust Bowl.
For **Contour ploughing** – ploughing round, rather than up and down, slopes – rain has more time to infiltrate rather than form rills and gullies down slopes – the water soaks into the land providing extra moisture as well as preventing damage to the soil on the slope.
For **Shelter belts** – planting rows of trees at right angles to the direction of the prevailing wind – these act as a barrier for the land behind by reducing the force of the wind – the higher the barrier/trees the greater the protection.

Africa north of the Equator – the Sahel
For **animal fences** – movable fencing allow farmers to restrict grazing animals to specific areas of land and allow remaining land to recover. This allows farmers to move animals between fenced areas, reducing the dangers of overgrazing and trampling of soil and allowing soil and land to recover between grazing sessions.
For **"Magic Stones"** – This is a simple but very effective method of conserving soil. Diguettes are lines of stones laid along the contours of gently sloping farmland to catch rain water and reduce soil erosion. Diguettes allow the water to seep into the soil rather than run off the land. This prevents soil being washed away and can double the yield of crops such as groundnuts.

The Amazon Basin
For **Agroforestry schemes** – Agroforestry is the growing of both trees and agricultural/horticultural crops on the same piece of land. They are designed to provide tree and other crop products and at the same time protect and conserve the soil. It allows the production of diverse crops benefiting both land and peoples.
For **Purchase by conservation groups** – conservation groups, both national and international, aim to conserve soils by reforestation and the protection of existing forests eg the Amazon Region Protected areas (ARPAs) – created in 2002 by the Brazilian government in partnership with WWF, Brazilian Biodiversity Fund, German Development Bank, Global Environment Facility and World Bank – is a 10-year project aimed at increasing protection of the Amazon. By 2008, 32 million hectares of new parks and reserves were created in the Brazilian Amazon under ARPA, among them the 3.88 million-hectare Tumucumaque Mountains National Park, one of the world's largest national parks. **20 marks**

Question 3 (River Basin Management)

(a) **Assess out of 12 marks. Maximum 3 marks for figures lifted from diagrams.**

Description and explanation of need for water management might include:

- Map Q3 indicates that the Zambezi River has many tributaries and the river basin has a very high drainage density leading to unpredictability of river flow which is dependent on when and how quickly snow melts in surrounding mountain areas.
- Increasing population in Zambia and surrounding countries gives increasing demand for water for domestic, power, industrial needs.
- Increasing demands from farmers for irrigation water to try and feed increasing population.
- Rainfall figures for Mongu indicates seasonal nature of rainfall – extremely dry from May to September but high monthly figures for November to March – leading to flooding and also run-off of water that could be stored and used in dry months.
- Temperature figures for Mongu indicate high temperatures throughout the year leading to very high evaporation rates. Monthly maximum temperatures peak at 34ºC and never drop below 27ºC.
- There is a need to regulate flow of river to prevent flooding during peak discharge and to keep water level high enough for navigation in dry months.
- There are 8 countries within the Zambezi River basin and they will have conflicting demands for a share of the river's water. **12 marks**

(b) **Assess out of 14 marks, with up to 10 marks for either physical or human factors.**

Physical factors might include:

- Geologically stable area away from earthquake zones/fault lines.
- Solid rock foundation for weight of dam.
- Narrow valley cross-section to reduce dam length.
- Large, deep valley to flood behind dam to maximise amount of water storage.
- Lack of permeability in rock below and around reservoir to prevent seepage.
- Low evaporation rates.
- Large catchment area above dam to provide reliable water supply.

Human factors might include:

- Cost of dam construction.
- Proximity of urban area for water and electricity.
- Proximity of agricultural areas for irrigation.
- Cost of displacing people.
- Cost of compensating farmers and home owners.
- Impact on communications.
- Unstable political situation and internal conflict eg Zimbabwe. **14 marks**

(c) **Assess out of 24. Answers should be authentic for the chosen river basin. Up to 6 marks may be awarded for appropriate named evidence illustrating the benefits and adverse consequences of the chosen scheme. Candidates must refer to all 6 sections for full marks. Deduct 2 marks for each part missed out. Award a maximum of 20 if there is no named area or examples.**

Answers will depend on the river basin chosen. However, for the Colorado River they might include:

Social benefits:
- Fresh water supply for growing desert cities eg Phoenix.
- Better standard of living in hot, dry climate with air conditioning, swimming pools, landscaping etc.
- Areas at reservoirs, eg Lake Mead, give opportunities for tourism, water sports, fishing etc.
- Regulation of river greatly improves flood control on river.

Social adverse consequences:
- People had to be moved off their land as valley areas were flooded.
- Loss of burial sites and other Native American sacred areas.
- Disagreements between states and countries with regard to allocation of water from river.

Economic benefits:
- Cheap HEP attracted industries eg electronics to take advantage of the area's cheap land and low taxes.
- Benefited tourist industry with reliable water supply – attractions like the Grand Canyon, gambling in Las Vegas, Hoover Dam etc.
- Expansion of irrigated land led to agribusiness-style farming.

Economic adverse consequences:
- Huge cost of building the dams eg Central Arizona Project cost $6 billion.
- High cost of maintaining dams, power plants and irrigation channels.
- Subsidised water for farmers has led to water wastage and the growing of crops that could be produced cheaper elsewhere.

Environmental benefits:
- Reservoirs provide sanctuaries for waterfowl and wading birds like the blue heron.
- The National Recreation Area around Lake Mead has more than 250 species of birds.
- Reliable seasonal water flow for plants and animal life.

Environmental adverse consequences:
- Water in river and on farmland becomes saline with high evaporation rates – farmers downstream have to switch to more salt-tolerant crops.
- Change in river regime has caused the loss of many animal habitats eg the drying up of Colorado delta area where there used to be a great variety of birdlife.
- Huge amount of water loss by seepage through the sandstone rocks around Lake Powell. Scenic attractions like the Rainbow Bridge are being affected by the high water levels in Lake Powell.   **24 marks**

Question 4 (Urban Change and its Management)

(a) **Assess out of 8 with a maximum of 5 marks for description. Award up to 2 descriptive marks for named cities, linked to specific reasons for location.**

Answers will depend upon the Developed Country that is chosen, but for Australia answers might include:

- Concentration of major cities in south-east Australia between Melbourne and Sydney due to early penal colonies and mineral deposits eg gold, zinc and bauxite.
- Coastal cities bordered by eastern mountain ranges like Blue Mountains act as barriers to extension.
- The interior of Australia has no large cities due to desert.
- Perth on the coast of Western Australia, due to natural resources and agricultural centre for the state.
- Darwin is a city in the more tropical north, an early trading port.
- The capital city, Canberra, is inland, planned to attract investment inland.
- Hobart is on the island of Tasmania to the south-east of the mainland. **8 marks**

(b) **Assess out of 8 marks, for full credit both site and situation must be referred to. Award up to 2 marks for appropriate named examples within the city referred to.**

Answer will depend on the city chosen, but for Melbourne the following might be suggested:

- Natural, sheltered bay ie Port Philip Bay suitable for port development.
- Located at estuary of Yarra River, again suitable for shipping and dock development.
- Developed as State capital of Victoria.
- Nearby beaches for water based leisure and tourism.
- On a coastal plain with flat land to allow urban growth.
- South of mountain range ie Australian Alps.
- Route centre along coastal plains and to the north through Kilmore Gap. **8 marks**

(c) **Assess out of 12.**
Assess out of 8 marks if candidates fail to use a named city.
Award a maximum of 7 for part (i) or (ii), and a maximum of 3 marks for specific named examples.

(i) Problems caused by urban sprawl might include:

- Using up valuable recreational land and farmland.
- Threatening wildlife habitats and removing green areas and open land.
- Increased commuting leading to traffic congestion, more road building and increased levels of air pollution.
- Longer travelling times from suburbs to CBD.
- Building and services in inner city urban areas not being used or becoming run down or derelict eg housing, schools, factories and shopping centres.
- Flooding issues caused by development on the floodplain.

(ii) Problems caused by urban sprawl might be resolved in the following ways:

- Protecting the Green Belt through legislation and planning controls.
- Prohibit urban development in Green belt areas.
- Designate urban growth corridors.
- Redevelop inner urban areas with modern affordable housing, high quality shopping areas and create hubs for entertainment.
- Encourage industry onto brownfield sites through grants and incentive schemes.
- Improve public transport systems reducing need for additional motorways and related infrastructure eg park and ride systems, tramways. **12 marks**

(d)   **Assess out of 10**
       Award up to 5 marks across part (d) for specific named examples within the chosen city.

(i)   **Assess out of 10 marks avoiding double credit for very similar push/pull factors and reversals. Mark out of 7 if there is no named city.**

Answers may include the following points:

Rural 'push' factors:

- Low income from farming and related work.
- Lack of employment in manufacturing and service industry.
- Lack of education and low literacy levels.
- Poor health facilities.
- Higher levels of disease and malnutrition.
- Poor sanitation and lack of utilities eg electricity, water, gas.
- Poor quality of infrastructure.
- Civil unrest.
- Rural degradation.
Environmental disasters eg drought, earthquakes.

Urban 'pull' factors:

- Mainly reversals of above, but may also include entertainment and bright lights.
- Informal employment opportunities, improved housing, development of social communities.

Generic reasons can also be accepted ie population growth with higher birth rates and falling death rates, immigration from neighbouring countries and movement into cities by refugees.   **10 marks**

(ii) **Assess out of 12.**
Allow up to 8 marks for either socio-economic or environmental problems. Mark out of 8 marks if there is no authentic city.

Answers may include:

- Impoverished and overcrowded areas which may lack public utilities and amenities of water supply, electricity and sewerage.
- Erratic power supply.
- Semi-urban peripheral areas with poor housing quality and poor economic opportunities.
- Squatter settlement located on steep slopes and lagoons.
- Areas lacking basic services eg schools, piped water and hospitals.
- High incidence of disease.
- High rates of unemployment, growth of black market and a 'grey' economy, crime, drugs and prostitution increasing.
- Problems of waste management and disposal.
- Water pollution from toxic industrial waste and sewage effluent.
- Unhealthy city dumps and landfill sites.
- Air pollution caused by chronic traffic congestion and uncontrolled industrial emissions. **12 marks**

Question 5 (European Regional Inequalities)

(a)   **(i)**   **Assess out of 8 marks. A maximum of 6 marks should be awarded for identifying areas or countries.**

Credit should be awarded for candidates noting that Objective 1 status was awarded to Europe's peripheral areas, eg NW Ireland, SW England, Wales, Portugal and Spain, S Italy, Greece, N Sweden, N Finland, the eastern part of Germany and the 2004 Eastern bloc EU members.

Convergence zones are very similar adding Bulgaria and Romania (the most recent EU members) and no longer providing this type of support to Ireland, areas of Northern Spain, Sardinia, Sweden and Finland.   **8 marks**

  (ii)   **Assess out of 10.**

Countries would benefit from Convergence Region funding though the following

- Support for infrastructure improvements.
- Support for employment training and education.
- Support for production/manufacturing sectors.
- Environmental protection.
- Improving access to the peripheral areas.
- Improving IT, literacy and numeracy.

Other European measures which candidates may refer to include:

- European Regional Development Fund (ERDF), which provides a wide range of direct and indirect assistance to encourage firms to move to disadvantaged areas, eg loans, grants, infrastructure improvements.
- European Investment Bank (EIB) provide loans for businesses setting up in disadvantaged areas.
- European Social Fund (ESF) assists with job retraining and relocation.   **10 marks**

(b) (i) **Assess out of 10 marks, a maximum of 4 marks may be awarded for data taken from the reference table that is used to correctly illustrate a point.**

Description might include the marked differences in the four indicators across the 27 member states. Figures should be quoted and countries named. Bulgaria, Romania, Latvia and Poland stand out as being particularly disadvantaged compared to countries such as Luxembourg, Ireland, Netherlands and Sweden. Candidates may wish to describe the pattern with reference to year of membership and may note that some indicators such as employment rates do not show such a strong difference between richer and poorer countries. Italy has a significant lower employment rate (58%) compared to the other original EU members. Candidates may also note other exceptions to the general pattern eg Slovenia's higher HDI ranking and GDP per capita, in comparison to other newer members of the European Union.   **10 marks**

(ii) **Assess out of 14 with maximum of 8 for either physical or human factors.**

Candidates should refer to both physical and human factors to account for the variation in level of development, including factors such as:

Physical factors

- Relief/geology
- Climate/water/resources
- Soil quality/soil erosion
- Natural Disasters

Human Factors

- Remoteness/isolation/communications
- Employment opportunities
- Historical access to raw materials
- Development of industry/technology
- Land tenure
- Agricultural development
- Population density/location and proximity to markets
- Unskilled labour, poorly educated workforce
- Some Eastern countries later in joining due to fall of communism so not gaining benefits until later

Candidates may refer to specific examples eg the newer Eastern periphery countries whose reasons for lack of prosperity might include:

- Less favoured area climatically – very cold continental winters
- More remote from major political centres of Europe – London, Strasbourg, Paris, Brussels.
- Less well served by transportation links – away from major motorway networks, away from 'hub' airports like Schiphol, London and Paris airports and away from major container ports like Europort with worldwide trade links.
- Legacy in some cases of high unemployment or underemployment and high percentage with relatively poor living standards and loss of younger workforce through migration to wealthier EU countries.   **14 marks**

(c) **Assess out of 8. Award up to 2 marks for named examples within the chosen country. For maximum marks some comment must be made on the effectiveness of the strategies named. Answers will depend on the country chosen.**

National Government Measures include:

- Regional development status, Enterprise Zone status, capital allowances training grants, assistance with labour costs.
- Specific assistance to former coal mining/iron and steel areas
- Intervention of national government resulting in the relocation of major government employers or state owned firms to disadvantaged areas eg Fiat to Southern Italy, DVLA in Swansea, MoD in Glasgow.
- In Italy the Cassa per il Mezzogiorno would be a key policy.   **8 marks**

Question 6 (Development and Health)

(a) **Assess out of 8, with a maximum of 6 for one indicator.**
Award 2 marks for each correctly fully stated indicator.

Economic indicators could include:

- Gross Domestic Product per capita in US $.
- Average Annual Income per capita in US $ or GB £.
- Percentage of working population employed in, say, the Primary sector.

Social indicators could include:

- Adult literacy rates (%).
- Average life expectancy at birth in years.
- Number of cars/TV sets/telephones etc per 1000 people.

Candidates should explain what the indicator demonstrates about the level of development in a country eg GDP per capita is a measure of the value of goods and services and demonstrates the development of industry etc. **8 marks**

(b) **Assess out of 12 awarding up to 4 marks for the names of relevant countries provided they are linked to appropriate factors/reasons.**

Award a maximum of 6 for over-generalised responses, or candidates who refer to differences within a country.

Answers may refer to the likes of:

- Oil-rich countries such as Saudi Arabia, Brunei, the UAE or to relatively well-off countries like Malaysia which are able to export primary products such as tropical hardwoods, rubber, palm oil and tin as opposed to poorer nations such as Burkina Faso or Chad which lack significant resources.
- Newly Industrialising Countries (NICs) eg China, South Korea, Taiwan are able to earn substantial amounts from steel-making, shipbuilding, car manufacturing, electrical goods, toys, clothing etc. They have been able to benefit from their population's entrepreneurial skills and low labour costs.
- Some countries such as Brazil and India have both resources and growing manufacturing industries.
- The expansion of tourism has helped to improve living standards/create new job opportunities in countries like Thailand, Jamaica, Kenya, Sri Lanka and earns valuable foreign currency.
- Many countries are afflicted by recurring natural disasters which restrict development/hamper progress eg drought in sub Saharan Africa (Mali, Chad, Burkina Faso…) – floods/cyclones in Pakistan/Bangladesh – hurricanes in the Caribbean – tsunamis in Sri Lanka, Indonesia.

Political instability – eg recent disruptive civil wars in places such as Sudan/Rwanda/Somalia/Liberia/Sierra Leone or larger-scale conflicts in Iraq or Afghanistan have also had a negative impact. Widespread corruption and mismanagement have accounted for the marked decline of Zimbabwe's economy and are a continuing problem in many other African nations.

12 marks

(c)   **Assess out of 8. NB There may be some overlap between human and physical factors.**

(i)   For Malaria – Physical factors:

- Female Anopheles mosquito.
- Hot and wet climates such as those experienced in the Tropical Rainforest or Monsoon areas of the world.
- Temperatures between 15°C and 40°C.
- Areas of shade in which the mosquito can digest blood.
- Stagnant water.

Human factors:

- Nearby settlements to provide a 'blood reservoir'.
- Suitable breeding habitat for the mosquito – areas of stagnant water such as irrigation channels, reservoirs or poor drainage that leaves standing water uncovered eg tank wells, Irrigation channels, water barrels, padi fields.
- Exposure of bare skin.
- Increased trade and tourism.
- Not completing courses of drugs.

8 marks

(ii)   **Assess out of 12.**
NB A maximum of 1 mark each should be allocated for examples of insecticides, drugs and herbal medicines with a maximum of 4 for appropriate named examples.

Strategies used to combat the spread of Malaria may include:

Trying to eradicate the mosquito:

- Insecticides eg DDT and now Malathion.
- Mustard seeds thrown on the water that becomes wet and sticky so dragging the mosquito larvae under, drowning them.
- Egg-white sprayed on the water creates a film which suffocates the larvae by clogging up their breathing tubes.
- BTI bacteria grown in coconuts – the fermented coconuts are broken open after a few days and thrown into the mosquito-larvae infested ponds – the larvae eat the bacteria and have their stomach linings destroyed.
- Larvae eating fish introduced to ponds.
- Draining swamps, planting eucalyptus trees that soak up excess moisture, covering standing water.
- Genetic engineering eg of sterile males.

Treating those suffering from malaria:

- Drugs like chloroquin, larium and malarone.
- Qinghaosu extracted from artemesian plant – a traditional Chinese cure
- Continued search for a vaccine – not available as yet.

Education programmes in:

- The use of insect repellents eg Autan.
- Covering the skin at dusk when the mosquitoes are most active.
- Sleeping under an insecticide treated mosquito net.
- Mesh coverings over windows/door openings.
- WHO 'Roll Back Malaria' campaign.
- The Bill and Melinda Gates Foundation.   **12 marks**

(d) **Assess out of 10 ensuring that candidates explain why PHC is suited to developing countries to gain full marks. (Avoid crediting 'cheaper' more than once). Award a maximum of two marks for authentic named examples of PHC schemes.**

Examples of Primary Health Care (PHC) strategies may include:

- Use of barefoot doctors – trusted local people who can carry out treatment for more common illnesses – sometimes using cheaper traditional remedies.
- Use of ORT (Oral Rehydration Therapy) to tackle dehydration – especially amongst babies. This is an easy, cheap and effective remedy for diarrhoea/dehydration.
- Provision of vaccination programmes against disease such as polio, measles, cholera. Candidates may also refer to PHC as based on generally preventative medicine rather than (more expensive) curative medicine.
- The development of health education schemes in schools, community plays/songs concerning AIDS, with groups of expectant mothers or women in relation to diet and hygiene. Oral education being much more effective in illiterate societies.
- Sometimes these initiatives are backed up by the building of small local health centres staffed by visiting doctors.
- PHC can also involve the building of small scale clean water supplies and Blair toilets/pit latrines – often with community participation.
- The use of local labour and building materials is often cheaper; it also provides training/transferable skills for the participants and gains faster acceptance/usage in the local and wider community. **10 marks**

[END OF MARKING INSTRUCTIONS]