2.7 Hot Deserts: 30-minute Pack

AQA 8035 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 This question is about the characteristics of hot desert environments.

(a) State the approximate annual rainfall total that defines a hot desert climate. **(1)**

(b) State one other characteristic of the climate of a hot desert. **(1)**

(c) Name one hot desert location in the world. **(1)**

(Total for Question 1 is 3 marks)

2 A hot desert region has an area of 200,000 square kilometres and a population of 4,000,000 people. (These figures are illustrative, not the exact statistics for any single named place.)

(a) Calculate the population density of this region, in people per square kilometre. **(2)**

(Total for Question 2 is 2 marks)

© Revision Library | revisionlibrary.co.uk

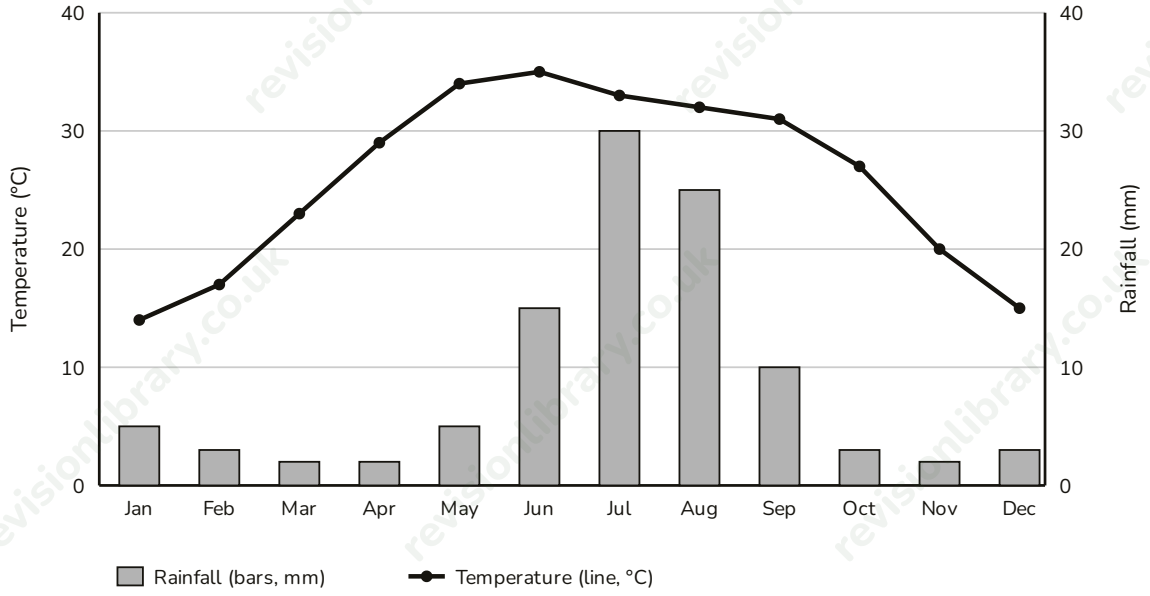
3 'The challenges of developing hot desert environments are greater than the opportunities.' Assess the extent to which you agree with this statement.

(Total for Question 3 is 8 marks)

© Revision Library | revisionlibrary.co.uk

4 Figure 2 shows a climate graph for Location X, a hypothetical hot desert location.

Figure 2: climate graph for Location X (a hypothetical hot desert location)



(a) Using Figure 2, calculate the total annual rainfall at Location X. **(2)**

.....

(b) Using Figure 2, state which month is the hottest, and give its mean temperature. **(1)**

.....

(c) Using Figure 2, calculate the range in mean monthly temperature over the year. **(2)**

.....

(Total for Question 4 is 5 marks)

© Revision Library | revisionlibrary.co.uk

5 Describe TWO ways that plants are adapted to survive in a hot desert environment.

(Total for Question 5 is 4 marks)

6 Explain TWO causes of desertification (land in dry areas becoming more desert-like).

(Total for Question 6 is 4 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 2.7 Hot Deserts: 30-minute Pack

Question 1

(a) less than 250 mm of rain per year, oe **B1**

(a) Answer: Less than 250 mm of rain per year.

(b) any one of: very high daytime temperatures (often above 40°C in summer); a large daily (diurnal) temperature range; low and unreliable rainfall; clear skies with little cloud cover, oe **B1**

(b) Answer: For example, very high daytime temperatures, often above 40°C in summer.

(c) any correctly named hot desert, e.g. the Sahara Desert, the Thar Desert, the Sonoran Desert, the Atacama Desert **B1**

(c) Answer: For example, the Sahara Desert.

Question 2

(a) 4,000,000 / 200,000, oe **M1**

(a) 20 people per square kilometre cao **A1**

(a) Answer: 20 people per square kilometre.

Question 3

Level 4 A detailed, well-balanced assessment that uses accurate, detailed reference to a named hot desert; weighs specific opportunities against specific challenges and reaches a clear, justified conclusion about the extent of agreement. **7-8**

Level 3 A clear assessment that uses accurate reference to a named hot desert; both opportunities and challenges are considered, and a conclusion is reached, though the weighing of one against the other may be less developed. **5-6**

Level 2 Some relevant opportunities and/or challenges are described, with limited or generalised use of a named example; a simple conclusion is given with little justification. **3-4**

Level 1 One or two isolated relevant points about hot desert development are made, with little or no use of a named example. **1-2**

Level 0 No relevant content. **0**

Indicative content:

- Opportunities in the Thar Desert include: mineral extraction (gypsum, limestone, feldspar); expanded farming enabled by canal irrigation (e.g. the Indira Gandhi Canal); solar and wind energy potential, including wind farms around Jaisalmer; and tourism based on the desert landscape and culture.
- Challenges in the Thar Desert include: extreme summer temperatures (above 45°C); limited and unreliable water supply outside irrigated areas; remoteness and poor infrastructure raising development costs; and the risk of soil erosion and desertification from overgrazing.
- Agrees with the statement: without continued investment in water supply and infrastructure, the physical challenges (heat, water scarcity, access) limit how much of the opportunity can actually be realised, especially for the poorest rural communities.
- Disagrees with the statement: large-scale schemes (irrigation canals, wind and solar energy, tourism) show that with sufficient investment, the opportunities can be developed successfully and support a growing population.
- A balanced answer recognises that the balance may differ between areas within the same desert (e.g. irrigated land near a canal versus remote areas far from infrastructure).
- A well-supported conclusion should state a clear judgement on the extent of agreement, backed by specific evidence from the named case study.

Question 4

(a) adds all 12 monthly values, oe **M1**

(a) 105 mm cao **A1**

(a) Answer: 105 mm.

(b) Jun, 35°C **B1**

(b) Answer: Jun, 35°C.

(c) 35 - 14, oe **M1**

(c) 21°C cao **A1**

(c) Answer: 21°C.

© Revision Library | revisionlibrary.co.uk

Question 5

adaptation 1 named, e.g. long roots that grow deep or spread wide, oe	**B1**
linked to function, e.g. to reach underground water or collect water quickly after rare rainfall, oe	**B1**
adaptation 2 named, e.g. small, waxy or spine-like leaves, oe	**B1**
linked to function, e.g. this reduces the surface area for water loss through transpiration, oe	**B1**

Answer: For example: long roots that reach deep underground water; and small, waxy or spine-like leaves, which reduce water loss through transpiration.

Question 6

cause 1, e.g. climate change can reduce and make rainfall more unreliable in already dry areas, oe	**B1**
linked detail, e.g. leaving less water available for plants, which die back and expose bare soil, oe	**B1**
cause 2, e.g. a growing population can lead to overgrazing by livestock and removal of trees for fuel wood, oe	**B1**
linked detail, e.g. this removes the vegetation that holds the soil together, so it is eroded by wind and occasional heavy rain, oe	**B1**

Answer: For example: climate change reduces and makes rainfall less reliable, killing vegetation and exposing bare soil; and a growing population leads to overgrazing and fuel-wood collection, which removes vegetation and exposes soil to erosion.

© Revision Library | revisionlibrary.co.uk