Exam-style questions

Chapter 6: Weather

Question 1

(a) Fig. 6.1 shows a weather station.

(i) Give one reason why this weather station is sited well. [1]

(ii) Name the instrument on the right of Fig. 6.1 and suggest why it may not have been recording when the photograph was taken. [2]

(iii) Name the instrument in the centre of Fig. 6.1 and describe the features of it that can be seen in the photograph. [3]

(iv) Explain how the Stevenson screen on the left of Fig. 6.1 has been designed so that the instruments inside it will make correct recordings. [4]

(b) Fig. 6.2 is a synoptic chart showing the pressure and weather recorded for southern Spain and Portugal on a day in winter.

Fig. 6.1

Fig. 6.2
Chapter 6 Exam-style questions

(i) Name three weather recording instruments used to measure the weather recorded at weather station X. [3]

(ii) Describe and explain the changes in temperature in the north of the map from the Atlantic Ocean across the mainland to the east of Spain. [5]

(c) With reference to examples, describe the advantages of using digital instruments for recording the weather. [7]

[Total: 25]

Question 2

(a) Fig. 6.3 gives information about a major environmental disaster that occurred in the area known as the Dust Bowl in the Great Plains of the USA. It covered east Colorado and New Mexico and west Kansas and Oklahoma.

- The area has less than 250 mm of precipitation a year on average and no surface water.
- Its natural grassland had deep roots that protected the fertile soil and trapped moisture in it. It could survive the long spells of drought that alternated with a series of years when rainfall was considerably higher than average.
- Many migrants settled there after the arrival of the railroad in 1869. Their main activity for the next 30 years was cattle ranching.
- When the area became overgrazed they changed to cultivation, encouraged by the initial fertility of the soil and many wetter years in the first 30 years of the 1900s. Many more migrants moved in and the arable area increased greatly, aided by mechanised ploughing and harvesting.
- The farmers did not use dry farming methods. Cotton farmers left fields bare in winter when winds are strong and, by burning the stubble, prevented the soil from receiving nutrients which would have been gained if the stubble had been left to decompose into the soil. Without these nutrients, the soil lost its structure, became powdery and easily moved. If left, the stubble would have protected the soil from erosion.
- Severe droughts struck the area between 1930 and 1939. Crops failed and strong winds blew the topsoil from the bare fields in clouds so thick that the whole sky was covered and dark, like night.
- The erosion made 400 000 km² of land useless for agriculture and forced 3.5 million people to move away from the Great Plains.

Fig. 6.3

(i) Name the series of processes that turn a productive area into an unusable Dust Bowl. [1]

(ii) State two characteristics of the climate that contributed to the process you have named in (i). [2]
(iii) Describe **three** ways in which farming practices used in the area increased soil erosion. [3]

(iv) Define **sustainable farming** and explain why it is vital to use sustainable farming methods. [4]

(b) Fig. 6.4 shows a semi-desert area to the west of the Dust Bowl that has been eroded in severe rainstorms after overgrazing by herds of cattle.

![Fig. 6.4](image)

(i) Describe the eroded landscape in the middle of Fig. 6.4. [3]

(ii) Describe the natural vegetation in the foreground. Explain why the area could be easily eroded and how it could be used sustainably by farmers. [5]

(c) Name an area where economic development is taking place that will increase global warming. Explain how the activity does this and describe the risks to the environment that will result from global warming. [7]

[Total: 25]
Question 3

Figs. 6.5, 6.6 and 6.7 show different types of cloud. Note that there are two types in Fig. 6.6, one at the bottom and one at the top.

![Figs. 6.5, 6.6 and 6.7](image)

**Figs. 6.5, 6.6 and 6.7**

Name the type(s) of cloud in each photograph and give reasons for your answers. [8]

[Total: 8]

Question 4

(a) Fig. 6.8 shows a recording instrument at a weather station.

![Fig. 6.8](image)
(i) Identify the weather recording instrument in Fig. 6.8. [1]

(ii) Describe how the instrument on the right is different from the one on the left. [3]

(b) (i) Use Table 6.1 to calculate the relative humidity when the instrument is showing the temperatures in Fig. 6.8. Show your working.

Table 6.1

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(ii) What would the relative humidity be if the two thermometers had the same reading? [1]

[Total: 8]