IELTS ACADEMIC · READING PASSAGE 14 · QUESTIONS 1–14 · SUGGESTED TIME: 20 MINUTES

The Rarest Colour

Why the colour that seems to fill the sky was, as a material, the hardest of all to hold.

A Blue seems to be everywhere. It fills the daytime sky and colours the sea to the horizon, and for most people it is among the first colours they can name. Yet as a material, something that can be ground up, mixed and painted onto a surface, blue is strikingly rare. For most of human history it was the hardest colour to obtain, and the story of how people learned to make it runs alongside the story of trade, chemistry and art. To ask how a civilisation got its blue is to ask what it could mine, whom it could trade with, and how far its chemistry had come.

B Part of the difficulty is that nature offers very little true blue to work with. The brilliant blue of a butterfly's wing or a jay's feather is usually not pigment at all but a trick of structure: microscopic ridges scatter light so that only blue reaches the eye, and if you crush the wing the colour vanishes. The same is true of most blue in the animal world, from the kingfisher to the morpho butterfly, whose colour is built from colourless structures. Even most blue flowers reach their colour by modifying red pigments rather than by producing a blue one outright. A painter who wanted blue could not simply gather it from the living world, as yellows and browns could be gathered from earth and ochre. Blue had to be won by other means.

C The first people to solve the problem did so by manufacture. Around 2500 BCE, Egyptian workshops learned to make a blue pigment by heating sand, a copper compound and natron together at a high temperature. This substance, now called Egyptian blue, is generally regarded as the first synthetic pigment, a deliberate piece of chemistry produced long before anyone understood why it worked. The recipe spread around the ancient Mediterranean, but it was demanding to make, and after the fall of Rome the knowledge was lost for centuries, leaving later scholars to puzzle over a colour the ancients had made and they could not.

D The blue that replaced it was natural but scarcely less troublesome. Ultramarine was made by grinding lapis lazuli, a stone mined in any quantity in only one remote region, in what is now Afghanistan. The raw stone had to be carried thousands of miles and then laboriously purified, for simple grinding produced only a dull grey. The best ultramarine was drawn out by kneading the ground powder in wax and washing it again and again, a slow process that threw away most of the material and kept just the purest blue. The finished pigment was, weight for weight, more expensive than gold. Medieval and Renaissance painters therefore used it sparingly and pointedly, reserving it for the most important passages of a picture; the robe of the Virgin Mary was so often painted in ultramarine that the colour itself came to carry meaning, a signal of devotion and expense at once.

E A cheaper blue arrived by accident. In early eighteenth-century Berlin, a colour maker attempting to produce a red instead created a deep blue, the result of a contaminated batch of materials. Prussian blue, as it became known, was the first modern synthetic pigment, far less costly than ultramarine and soon available across Europe and beyond. It transformed both painting and printing, and the great wave in Hokusai's famous print owes its depth to this new and affordable blue, a colour no printmaker could have reached for a century earlier.

F Ultramarine itself was finally tamed in the nineteenth century. In the 1820s a French society offered a prize to anyone who could reproduce the colour of lapis lazuli by artificial means, and within a few years chemists had done it, working out the make-up of the stone and manufacturing an identical pigment from cheap ingredients. Synthetic ultramarine cost a tiny fraction of the mineral it copied. Almost overnight, a colour that had signified wealth and importance for centuries became ordinary, available to any painter or printer who wanted it. The precious had become merely useful.

G Even so, blue has never quite surrendered its difficulty. Genuinely new blue pigments remain rare events: as recently as 2009, chemists in the United States stumbled on a new and unusually durable blue while investigating quite different materials, and the discovery made news precisely because such finds are so uncommon. The colour

that appears to fill the sky and the sea, and that children name so early, remains, as a material to be made and held in the hand, one of the hardest that human ingenuity has ever had to win.

Questions 1–5 · True / False / Not Given

Do the following statements agree with the information in the passage? Write True, False, or Not Given.

1. Blue is common in the sky and sea but rare as a material to make things with.

2. The blue of a butterfly's wing comes mainly from a blue pigment in the wing.

3. Egyptian blue was more expensive to produce than ultramarine.

4. The method for making Egyptian blue was forgotten for a long period.

5. Prussian blue was created through careful, deliberate planning.

Questions 6–9 · Multiple choice

Choose the correct letter, A, B, C or D.

6. According to paragraph B, why does nature provide so little blue to make pigment from?

A Blue animals and plants are too rare to gather in useful amounts
B Blue materials fade too quickly once removed from the living thing
C Most natural blue is produced by structure and light rather than by pigment
D The blue in nature is poisonous and cannot safely be ground up

7. What made ultramarine so expensive?

A It could only be painted by the most skilled artists
B Its stone came from one remote source and needed laborious purification
C It faded unless it was mixed with gold
D The Church controlled who was allowed to buy it

8. What was significant about Prussian blue?

A It was the blue used for the robe of the Virgin Mary
B It was the first blue pigment ever made by people
C It was discovered in Afghanistan
D It was the first modern synthetic pigment and far cheaper than ultramarine

9. What does the discovery described in paragraph G suggest about blue?

A New blue pigments are now found almost every year
B Genuinely new blue pigments are still very rare
C Blue is no longer difficult to manufacture
D Natural blue is better than synthetic blue

Questions 10–11 · Sentence completion

Complete each sentence using no more than two words from the passage.

10. Egyptian blue is generally regarded as the first _____ pigment, made deliberately around 2500 BCE.

11. For centuries, ultramarine was, weight for weight, more expensive than _____.

Questions 12–14 · Matching information

The passage has seven paragraphs, A–G. Which paragraph contains the following information?

12. a reference to a work of art that used an affordable new blue

13. an explanation of why nature provides almost no blue pigment

14. a competition that led to an artificial version of a costly colour

Answer key

For teacher / self-study use. Fold or detach before distributing to students.

Q	Answer	Para	Explanation
1	TRUE	A	Paragraph A contrasts blue's presence with its rarity as a material.
2	FALSE	B	Paragraph B: the colour is structural, not pigment; crushing the wing destroys it.
3	NOT GIVEN	C	The passage never compares the two costs.
4	TRUE	C	Paragraph C: the knowledge was lost for centuries after the fall of Rome.
5	FALSE	E	Paragraph E: it arrived by accident, from a batch meant to make red.
6	C	B	Structural colour, not pigment, produces most natural blue.
7	B	D	Paragraph D: one remote source, carried far, then slowly purified.
8	D	E	Paragraph E: the first modern synthetic, far cheaper than ultramarine.
9	B	G	The 2009 find made news because new blues are rare.
10	synthetic	C	Paragraph C calls it the first synthetic pigment.
11	gold	D	Paragraph D: more expensive than gold.
12	E	E	Paragraph E: Hokusai's wave used the new affordable blue.
13	B	B	Paragraph B: most natural blue is structural, not pigment.
14	F	F	Paragraph F: the 1820s French prize led to synthetic ultramarine.