

Academic Reading Paper 06

Saffron, Strangers and Amateurs

Time allowed: 1 hour

INSTRUCTIONS TO CANDIDATES

- Do not open this booklet until you are told to do so.
- Write your name and the date at the top of the answer sheet.
- Answer **all** the questions.
- Write your answers **on the answer sheet**, not in this booklet.
- You must transfer your answers within the hour. **No extra time is given for transferring answers in the Reading test.**
- Do not remove this booklet from the examination room.

INFORMATION FOR CANDIDATES

- There are 40 questions in this paper.
- Each question carries one mark.
- There are three passages, with 13, 13 and 14 questions.

These passages were written for this library. They are **not** reproduced from any published past paper. The format, timing and task types follow the published specification for the Academic Reading test so that sitting this on paper feels like the real thing.

You should spend about 20 minutes on Questions 1–13, which are based on Reading Passage 1 below.

The most expensive spice

Saffron costs more by weight than almost anything else people eat, and the reason is not scarcity of land or of expertise. It is arithmetic performed by hand. The spice consists of the three red stigmas at the centre of the flower of *Crocus sativus*, and it takes something between 150,000 and 170,000 flowers to produce one kilogram of the dried product. Everything about that sentence has to be done by a person.

The plant itself is an oddity. *Crocus sativus* is sterile: it produces no viable seed, and every saffron crocus in the world is therefore a clone, propagated by splitting the underground corms and replanting them. A field is not sown but divided. This also means the species has almost no genetic variation to select from, so the agricultural improvement that transformed wheat and rice in the twentieth century has largely passed saffron by.

The flowers open at dawn and have to be picked that morning. Left in the field, the stigmas lose colour and aroma to the sun within hours, so the entire harvest of a region is compressed into one or two weeks in autumn during which every available person picks between first light and mid-morning. The flowers are carried whole to a shed, where the three stigmas are pulled from each one by hand. Nobody has built a machine that can do this, because the operation requires a soft grip, a decision about where the red ends and the pale style begins, and the discarding of a flower that has already been opened by an insect. The work is done overwhelmingly by women and by children out of school for the season, and in most producing regions the picking and the separating together account for a larger share of the final price than everything else combined.

The stigmas are then dried, which is where much of the value is created and most of it can be destroyed. Drying reduces the weight by about eighty per cent and fixes three compounds that between them define the grade: crocin, which supplies the colour, picrocrocin, which supplies the bitter taste, and safranal, the aroma, which barely exists in the fresh stigma and is formed during drying. Too hot and the safranal is driven off; too slow and the crop moulds. The international standard grades saffron by measuring all three, which is why a laboratory can tell where a sample sits without anybody tasting it.

Iran grows something close to ninety per cent of the world crop. Kashmir, where saffron has been cultivated around Pampore for centuries, produces a small quantity that commands a high price, and Spain, once a major grower, now imports a good deal of what it re-exports. Total world production is a few hundred tonnes a year — for a global crop, almost nothing. Kashmiri output has fallen by more than half in thirty years as irrigation failed and land was built over, which is why a region famous for the spice now supplies a fraction of a per cent of it.

A commodity this valuable and this uniform in appearance invites imitation, and saffron has been adulterated for as long as it has been traded. Dyed maize silk, safflower petals, shredded marigold and coloured strands of gelatine have all been sold as saffron; so has genuine saffron mixed with its own dis-

carded styles, which look similar and are worth little. The simplest test needs only water. Real stigmas release their colour slowly, over several minutes, and the threads themselves stay red; a dye gives up its colour at once and leaves the fibre pale. The trade tends to answer the problem with paperwork rather than chemistry, and most of what is sold as a guarantee of origin is a document. Documents are cheaper to forge than saffron is to grow.

The economics are unusual in one further way. Because the work is seasonal, brief, and impossible to mechanise, the cost of saffron tracks the cost of labour more closely than the cost of land. Where wages rise, production moves rather than modernises. That is the whole history of the crop in one sentence, and it explains why a spice that grows perfectly well in Europe is now grown almost entirely somewhere else. Iran's dominance is therefore not an accident of climate. It is the position of the last large producer in which the arithmetic still works.

Questions 1–5

Complete the table below.

Choose **NO MORE THAN TWO WORDS AND/OR A NUMBER** from the passage for each answer.

From flower to spice		
Stage	What happens	The constraint
Growing	corms are split and replanted	the plant is 1 , so there is no seed and no breeding.
Picking	flowers gathered whole, from first light	the whole regional harvest lasts one or 2 weeks.
Separating	the three stigmas are pulled out	no machine can do it, partly because it needs a soft 3
Drying	weight falls by about eighty per cent	the aroma compound 4 is created at this stage and lost if the heat is too high.
Grading	the three compounds are measured	a sample can be graded in a 5 without being tasted.

Questions 6–9

Answer the questions below.

Choose **NO MORE THAN THREE WORDS AND/OR A NUMBER** from the passage for each answer.

6 How many flowers are needed for one kilogram of dried saffron, at the lower estimate?

.....

- 7 Which part of the flower is the spice taken from?
- 8 Which country grows about ninety per cent of the world crop?
- 9 What is the only material needed for the simplest test for adulteration?

Questions 10–13

Do the following statements agree with the information given in Reading Passage 1?

Write **TRUE** if the statement agrees with the information, **FALSE** if the statement contradicts the information, or **NOT GIVEN** if there is no information on this.

- 10 Saffron crops have benefited from the plant-breeding advances made in other cereals.
- 11 Safranal is present in the stigma before the drying begins.
- 12 Kashmiri saffron is of higher quality than Iranian saffron.
- 13 Real saffron gives up its colour to water more slowly than a dye does.

You should spend about 20 minutes on Questions 14–26, which are based on Reading Passage 2 below.

Why strangers share

- A** The experiment is almost too simple to be interesting. Two people who will never meet are given a sum of money to divide. The first decides the split and the second may accept it, in which case both are paid, or refuse it, in which case neither is. Refusing costs the refuser real money and gains them nothing. Werner Güth and his colleagues published this design in 1982, and economics has been arguing about the results ever since. It has since been run tens of thousands of times, in dozens of countries, for stakes ranging from small change to several months' wages.
- B** What ought to happen is clear enough. A person who wants only to maximise their own payment should offer the smallest possible amount, and a person who wants only to maximise theirs should accept it, because a little is better than nothing. What actually happens, in laboratories in wealthy countries, is that the typical offer is between forty and fifty per cent of the sum, and that offers below about a fifth are refused roughly half the time. People pay, out of their own pocket, to prevent somebody else profiting from what they regard as an insult. The refusal is not a misunderstanding of the rules. Players who have had the arithmetic explained to them, and who plainly grasp that a small sum beats nothing, refuse anyway.
- C** For twenty years this was reported as though it revealed something about human beings in general, which was awkward, because the human beings in question were almost entirely university students in a handful of rich countries. Joseph Henrich set out to see whether the result travelled. Working with anthropologists already living in the field, he ran the same game in fifteen small-scale societies — foragers, herders, slash-and-burn horticulturalists — on four continents.
- D** The variation was far larger than anything found within the industrialised world. Among the Machiguenga of the Peruvian Amazon, who live in largely self-sufficient family units and trade very little, the average offer was about a quarter of the sum, and low offers were almost never refused; the responders appeared to find the whole idea of turning down free money puzzling. At the other end, among the Lamalera whale hunters of Indonesia, whose living depends on crews of a dozen men cooperating on open water, offers frequently exceeded half. In several societies unusually generous offers were themselves rejected, which makes sense where accepting a large gift places the receiver under an obligation they may not want. The Au and Gnau of Papua New Guinea produced the most awkward pattern of all, refusing offers at both ends of the range: too little was an insult and too much created a debt.
- E** What predicted a society's behaviour was not wealth, or education, or the size of the stake. Two things predicted it: how far people's daily lives involved exchange with people outside their own household, and how much their livelihood depended on cooperating with non-relatives. Where the economy required dealing fairly with strangers, people arrived at the experiment already expecting

to. The laboratory result was not a window into human nature. It was a measurement of an economy. The wider point Henrich drew from it is that a discipline which reasons about humanity from one kind of society will go on discovering its own arrangements and calling them human nature.

- F** A related question is why cooperation survives at all where free-riding pays. Ernst Fehr and Simon Gächter gave players the chance to spend their own money reducing the earnings of others. In a group without that option, contributions to a common fund declined steadily towards nothing as people learned that others were taking without giving. In an otherwise identical group where punishment was available, contributions rose and stayed high — even though punishing cost the punisher, and even in versions where the groups were reshuffled so that no punisher could ever benefit from the improvement they paid for. The effect also survived telling players in advance how many rounds there would be, which removes the possibility that they were investing in a reputation.
- G** The picture that emerges is neither the self-interested calculator of the older economics nor the naturally generous creature that replaced it in popular accounts. People arrive at a transaction with a norm about what is fair, they will pay to enforce it, and the norm itself is learned from the kind of economy they have spent their lives in. It is not fixed, and it is not free.

Questions 14–18

Reading Passage 2 has seven sections, A–G.

Which section contains the following information?

Write the correct letter, A–G.

NB You may use any letter more than once.

- 14** a reason why a very generous offer might be turned down
- 15** an admission that an earlier body of findings rested on an unrepresentative sample
- 16** the two factors that best explained differences between societies
- 17** an experiment in which cooperation collapsed when a particular option was withheld
- 18** a statement of what economic theory predicts people will do

Questions 19–22

Look at the following statements and the list of researchers below.

Match each statement with the correct researcher, A–C.

NB You may use any letter more than once.

List of Researchers
A Werner Güth
B Joseph Henrich
C Ernst Fehr and Simon Gächter

19 He designed the experiment on which the whole literature rests.

20 He tested whether a laboratory finding held outside the societies that produced it.

21 They showed that people will pay a cost to punish others with no prospect of gain.

22 He found that a society's trading habits predicted its sense of fairness.

Questions 23–26

Complete the sentences below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

23 In wealthy countries the usual offer is between forty and per cent of the sum.

24 Among the Machiguenga, responders seemed to find rejecting free money
.....

25 Henrich concluded that the laboratory result was really a measurement of an
.....

26 The writer concludes that a sense of fairness is learned and is therefore not
.....

You should spend about 20 minutes on Questions 27–40, which are based on Reading Passage 3 below.

In defence of the amateur

The word amateur has been falling for two hundred years. It comes from the Latin for one who loves, it once described a person who pursued a subject because they wanted to rather than because they were paid, and it now chiefly means somebody who is not very good. The change of meaning has carried an argument inside it, and the argument deserves examining rather than inheriting.

The standard story is a decline. Natural history, astronomy and archaeology were once open to any educated person with time; then, over the nineteenth and twentieth centuries, they were professionalised — degrees, salaries, journals, instruments beyond private means — and the amateur was pushed out. Darwin, who held no academic post and paid for his own work, is produced as the last of a vanished type. The story is told in obituaries, in popular histories and by scientists themselves, and it is told with regret.

Almost every element of that story is true, and the conclusion usually drawn from it is wrong. Professionalisation was not a loss of openness that we should regret; it was, among other things, the arrival of quality control. The nineteenth-century field that welcomed the enthusiastic gentleman also welcomed his phrenology, his racial anthropology and his conviction that the pyramids encoded prophecy. Peer review, statistics and formal training are the reason those things are no longer in the journals. Whoever wants the amateur's era back is asking for the whole of it.

But the sentence that the amateur was pushed out is simply false as a description of what happened next, and it is worth looking at what did. In 1911 a group of American observers of variable stars founded an association to pool their measurements; more than a century later, professional astronomers still draw on that archive, because a star that changes over decades needs somebody watching it on ordinary nights, and no professional observatory can spare the time. The Australian minister Robert Evans found dozens of supernovae by memorising the appearance of star fields and noticing when one had an extra point of light in it. Neither of these is a hobby that happens to resemble science. They are the observations, and the professionals use them. Evans's method resisted automation for a long time because it depended on holding several thousand galaxy fields in memory and noticing a change against them, which is a thing a person does easily and the computers of the period did not.

The internet then changed the scale rather than the principle. Galaxy Zoo, launched in 2007, asked volunteers to classify the shapes of galaxies in survey images, on the reasoning that human eyes were still better than the available software and that there were far more images than astronomers. The response was so large that the first data set was exhausted in weeks. In the same year a Dutch schoolteacher, Hanny van Arkel, flagged an object that fitted no category she had been given; it turned out to be an enormous cloud of ionised gas lit by a quasar that had since switched off, and it now carries her name in the literature.

It would be sentimental to describe this as the amateur's return, and the sentimental version is worth resisting because it obscures what is actually going on. The volunteers in these projects do not choose the questions, design the instruments, or write the analyses. What they supply is attention: hours of it, in quantities no salaried staff could be paid to provide, on tasks that cannot yet be automated. That is a genuine and specific contribution, and it is not the same as the contribution Darwin made.

The useful conclusion is that the categories were always poorly drawn. What separated Darwin from a modern volunteer is not that one was paid and the other is not; neither was. It is the possession of the question. A field is open to outsiders to exactly the degree that an outsider can hold a question in their head and gather what is needed to answer it, and that varies enormously between subjects and within a subject over time. Particle physics is closed in this sense and will stay closed. Taxonomy, ornithology, epigraphy and long-baseline astronomy are not, and treating them as though they were is a straightforward waste of the people who would work on them for nothing. Epigraphy is the clearest case of all: the inscriptions exist, the languages can be learned, and the limiting resource is somebody prepared to spend years on a corpus that nobody is funding.

So the defence of the amateur is not a complaint about professionalisation and not a nostalgia. It is a practical observation: in the subjects where the question can still be held by one person, excluding the unpaid is a decision about staffing costs disguised as a standard.

Questions 27–32

Do the following statements agree with the claims of the writer in Reading Passage 3?

Write **YES** if the statement agrees with the claims of the writer, **NO** if the statement contradicts the claims of the writer, or **NOT GIVEN** if it is impossible to say what the writer thinks about this.

- 27** The writer thinks professionalisation was a change we should regret.
- 28** The archive of variable-star observations begun in 1911 is still used by professionals.
- 29** Hanny van Arkel had been trained in astronomy before joining the project.
- 30** The writer regards the volunteers in projects like Galaxy Zoo as doing the same kind of work Darwin did.
- 31** The writer believes amateur contributions are more valuable than professional ones.
- 32** The writer thinks the distinction between amateur and professional was never well defined.

Questions 33–36

Complete the summary using the list of words, A–H, below.

List of Words

- A payment
- B question
- C attention
- D instruments
- E training
- F nostalgia
- G quality
- H scale

What actually divides the two

Professionalisation brought a form of **33** control that the writer has no wish to give up. The internet changed the **34** on which unpaid work is done rather than its nature: what volunteers contribute is **35** The real line, according to the writer, is not drawn by payment at all but by who is able to hold the **36**

Questions 37–40

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

- 37** The association founded in 1911
- A pooled observations of stars whose brightness changes.
 - B was founded by professional astronomers.
 - C was set up to search for supernovae.
 - D closed after a century of operation.
- 38** Why does the writer mention phrenology and racial anthropology?
- A To show that amateurs produced most of the bad science of the period.
 - B To show what the open field of that era also admitted.
 - C To argue that peer review has failed to remove them.
 - D To explain why Darwin held no academic post.

- 39** What does the writer say about Galaxy Zoo's first data set?
- A It took several years to classify.
 - B It was exhausted within weeks.
 - C It was classified more accurately by software.
 - D It was abandoned when volunteers lost interest.
- 40** Which of the following best states the writer's position?
- A Scientific fields should return to the openness of the nineteenth century.
 - B Volunteers should be paid for the work they currently do unpaid.
 - C Where a question can still be held by one person, excluding the unpaid wastes them.
 - D Professional standards have made amateur contribution impossible.