READING PASSAGE 2

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

The Scent of Bygone Days: Is Smell Uniquely Intertwined with Memory?

A There is a popular and widely circulated claim that odours are the strongest cues to memory. This adage has been promulgated in scientific as well as popular publications. Take Diane Ackerman's 1990 declarations that 'Perfume is liquid memory' and 'Smells detonate softly in our memory like poignant land mines' as examples, and the role of the olfactory sense in emotion and memory comes vividly to life in literary allusion and allegory.

B Through smell, we are instantaneously taken back to an intact simulated excerpt from our past. In 1991, Trygg Engen wrote that smell generates episodic memory, providing a richly detailed autobiographical episode borne totally complete in a single memory unit. He contrasted this to semantic memory, which relies on words, categories, indexing, and the like. In his view, smell may be the most primal of the senses and a product of a primitive world prior to language. But is scent really such a powerful cue for reminiscences as received wisdom would suggest?

C The phenomenon of smell-induced recollection has been studied in experiments, with mixed results. David Rubin and his colleagues at Duke University sought to investigate the assumption that an actual scent, rather than the idea of a scent, had a special function in memory. In 1984, they recruited forty student participants and assigned them randomly to either be presented with an odour or written words representing the odour. They utilised what they thought would be familiar smells, particularly ones that might provoke an early memory; these included Johnson & Johnson's baby powder, plasters, soap, peanut butter, etc.

D Then participants were asked to describe any memories awakened by the scents or descriptions and respond to questions like 'How clear or vivid was the memory?' or 'How did you feel emotionally at the time of the memory?' In a second experiment, the researchers used a similar method but added photographs representative of an odour in addition to the actual scent and written words. The team made some surprising discoveries, such as that a memory triggered by an actual scent was likely to have never been thought of before, or thought of less often, and odour might often evoke a more pleasing or emotional memory than pictures or words.

E Subsequent experiments have shed additional light on the issue. In 2000, British psychologist John Downes of the University of Liverpool discovered that the connection between an actual scent and a memory seems to be tied to age. He gathered subjects in their late 60s and early 70s, presented them with olfactory cues or verbal cues (smell-related words), and asked them to describe a related

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autobiographical experience that came to mind. Their analysis revealed that the actual odours triggered memories from a much younger age than the verbal cues. The former tended to revive recollections from age 6 to 10, whereas the latter generally evoked memories from between 11 and 25 years of age. This suggests both that smell is a crucial factor in providing a backdrop of contextual details for childhood experiences and that it is indeed closely tied to episodic memory because semantic abilities are still limited in late childhood and continue to form well into adolescence.

F Another interesting experiment was described in a 1999 article in the *British Journal of Psychology*. The author, John Aggleton of Cardiff University, employed a double-cueing methodology in an ingenious manner: he sought to test the relationship between odour and memory outside the laboratory, so he visited the Jorvik Viking Centre, a museum in York, where an exhibition had piped 'Viking odours' into the exhibit area for a multisensory effect. Aggleton wanted to know if these odours would aid repeat visitors in remembering details of the exhibit years later. He gave three groups of returning museum goers questionnaires in various conditions - in the presence of the same original 'Viking odours', a control odour, and no odour. He then repeated the test but with changed conditions for each group. Only the group that took the second test in the presence of 'Viking odours' improved their performance on the questionnaire. Thus, Aggleton concluded that odours 'can provide strong contextual cues that aid in the recall of information originally presented in the presence of those odours'.

G Still, the vast majority of experts agree that the notion of smell being the 'best' cue to memory is largely unfounded because there is no proof that an odour-evoked memory is more accurate than that of any of the other stimuli. However, there does seem to be a consensus that odour-related memories are more emotional in essence. According to Rachel Hertz's article in *The Oxford Handbook of Social Neuroscience*, when an odour evokes a memory, this first creates emotional sensations, 'After which the event which initially brought about the emotion emerges. In other words, the experiential order of odour-evoked memory appears to follow the temporal sequence of the neurological pathways that are involved.' This order progresses from the sensory-perceptual, to the limbic-emotional and then on to higher cognitive structures. Hertz claims that the 'bottom-up versus top-down temporal unfolding of odour-evoked memory may distinguish it from other memory experiences'.

H Thus, the strong association between olfaction and emotional recollection likely has an evolutionary basis as it has undoubtedly played a key role in human survival. Anatomically, olfactory centres are in close proximity to the most basic portions of the brain, which are directly responsible for emotional experience and memory. Only two synapses separate the olfactory nerve from the amygdala, a set of neurons responsible for emotion, emotional behaviour, and motivation. In evolutionary terms, this integrative emotional centre - indeed, the entire limbic system - arose from the olfactory area of the brain. Considering this, some researchers, such as Michael Jawer, have suggested that without a sense of smell, we may have never evolved to have emotions at all.

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Questions 14-19

Reading Passage 2 has eight paragraphs, **A-H**.

Which paragraph contains the following information?

*Write the correct letter, **A-H**, in boxes 14-19 on your answer sheet.*

14 the use of photos to signify smells

15 examples of well-known scents

16 a reference to the use of smell in metaphor

17 a mention of how feelings arise from memories

18 a description of a study conducted in a real-life setting

19 how different cues evoke the memories of different age periods

Questions 20-23

Complete the notes below.

*Choose **ONE WORD ONLY** for each answer.*

Write your answers in boxes 20-23 on your answer sheet.

Smell and Memory
– Smells may be the most powerful 20 ..... in bringing up memory

Types of memory
– Trygg Engen: smells can offer an entire 21 ..... of someone's life in one memory
– Smell might be the most primitive of the senses

Evoking childhood memories
– John Downes: smells set off memories of childhood more than statements
– Smell gives background information for 22 ..... from youth

Order of smell memory
– Rachel Hertz: smell related memories progress from sense/perception, limbic/ emotional to advanced
23 ..... structures
– Smell has a strong basis in evolution

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Questions 24-26

Do the following statements agree with the information given in Reading Passage 2?

In boxes 24-26 on your answer sheet, write

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

24 Photographs bring up more moving memories than smells.

25 Odour is more effective than taste for memory.

26 The better accuracy of smell for remembering is not proven.

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READING PASSAGE 3

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

Group Behaviour

Most people consider themselves autonomous individuals who make their own decisions. However, studies have shown that conformity is a natural human impulse, and people will go to astonishing lengths just to fit in.

In sociology, the similarity with which members of a group behave is known as group behaviour, and a peculiar aspect of people in groups is that they tend to conform to the beliefs, opinions, and behaviours of the other members. At times, people may even engage in conduct that conflicts with their personal moral and ethical code. Some violate these conventional codes because they perceive membership as too valuable to compromise. In such cases, their conscience may become disturbed, but they tend to go along with the group anyway. Many studies have explored or attempted to explain this phenomenon.

A series of tests conducted by Solomon Asch, an American Gestalt psychologist, examined the willingness of a group member to conform to the viewpoint of fellow members even if the members' viewpoint was incorrect. In each test, he put people in groups of seven at a table and showed them two cards – one with a single line and one with three lines of varying lengths. The participants were then asked which of the three lines on the second card was the same length as the single line on the first card. However, there was a catch. In each experiment, only one out of the seven subjects was 'real'; the others had been coached to respond to questions in a certain way. Specifically, they were told to purposely answer some questions incorrectly to pressure the real student to conform. Asch discovered that more than half of the real subjects went along with the incorrect answer at least once.

But is this really a simple matter of peer pressure or fear of going against the mainstream? Neurologist Gregory Berns sought a physiological explanation and conducted an experiment with MRI scanners to determine which parts of the brain were 'activated' when a person accepted a decision that was in conformation with the group, even when they felt it was incorrect. He reasoned that if peer pressure was responsible, he would see changes in activity in the forebrain, which is involved in monitoring conflicts. But what Berns discovered was that when people follow a group's opinion, the posterior areas of the brain were stimulated. This indicated that a change in spatial perception had occurred, and led Berns to conclude that the incorrect responses the false respondents had provided literally altered the perception of the true participants. Thus, he challenged the notion that the participants in the Asch experiment were merely giving in to peer pressure. In fact, they were actually seeing the length of the lines differently from how they would have if no false responses were given.

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Social psychologist Stanley Milgram went even further in his experiments at Yale University in the early 1960s. The Milgram experiments were groundbreaking in that they were the first extensive ones carried out that focused on extreme obedience to authority and its potentially destructive repercussions. Milgram told the subjects that they were participating in a study about learning and memory and then assigned them to be 'teachers', with the stated goal of determining the role of punishment in learning. However, what Milgram actually wanted to do was find out the extremes to which people would go to punish others when instructed to do so. In the experiment Milgram designed, the subjects were instructed to punish the 'learners', who in fact were actors, by giving them an electric shock each time they failed to offer the correct answer. His experiments demonstrated that even when the actors screamed in agony for the test to stop, the majority of 'teachers' continued to administer the shocks at the request of the experimenter.

An even more ominous experiment conducted by a high school teacher in Palo Alto, California underscores the dangers of conforming. History teacher Ron Jones was teaching his class about totalitarianism when he was interrupted by a question asking how the citizens of any nation could be convinced to accept living under a dictatorship. This gave him an idea. The next week, he began lecturing on the positive qualities of discipline and instituted new rules, under the name 'Third Wave', which mandated that students answer questions succinctly, in three words or less. He also introduced slogans like 'Strength through discipline; strength through community' and had the students stand and recite the new mottos. Furthermore, he introduced a Third Wave salute and membership cards, and suggested that members report others who were breaking rules. He was astounded when they willingly did so.

On the fourth day of the experiment, Jones told the students that Third Wave was based on an actual political movement in history and that he would reveal the leader of the movement the next day, and he did this by showing a film which featured Adolf Hitler and footage of the German labour camps during World War II. The students were stunned, and some were in tears. Jones pointed out to them that out of regard for the group's objectives, they had failed to examine their own convictions and the principles on which the group was founded. The name 'Third Wave' had not been accidental. Indeed, a new Third Reich had nearly been born.

Experiments aside, it goes without saying that in any society, group members must conform to some degree for cooperation and sound decision making. Yet the dangers of rigid conformity must be avoided, or it can result in 'groupthink', creating excessive loyalty to an idea, cause, action, or decision at the expense of critical thinking. So, then, in any group, deviance in some form is necessary to guarantee that the ramifications of a proposition are explored from every possible angle. Still, deviance in its extreme form can lead to stalemates, arguments, or even anarchy. Thus, it is imperative that constructive forms of criticism be encouraged while destructive criticism is regarded with the utmost vigilance.

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Questions 27-31

*Complete each sentence with the correct ending, **A-G**, below.*

*Write the correct answer, **A-G**, in boxes 27-31 on your answer sheet.*

27 When membership of a group is considered so desirable, people

28 According to Berns, the false responses

29 In Milgram's experiment, subjects were told to

30 The Third Wave experiment required that students must

31 Strict compliance should be avoided because it can

A	have changed the participant's actual perception.
B	respond to questions with concise answers.
C	go against the accepted code.
D	prove that conformity influences behaviour.
E	get in the way of critical thinking.
F	have an impact on group decisions.
G	impose punishment at false responses.

Questions 32-35

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

In boxes 32-35 on your answer sheet, write

YES	*if the statement agrees with the views of the writer*
NO	*if the statement contradicts the views of the writer*
NOT GIVEN	*if it is impossible to say what the writer thinks about this*

32 Asch found that only a few of the real participants chose incorrect answers.

33 Milgram intended to test how much punishment a person would inflict on another when told to.

34 Any form of deviance will ensure that an idea is effective enough to realise.

35 Criticism which is not beneficial must be viewed with the greatest caution.

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Questions 36-40

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

Write the correct letter in boxes 36-40 on your answer sheet.

36 What was Solomon Asch trying to find out?

- **A** what type of people conform to a group consensus
- **B** how people reacted to the correct choice
- **C** whether people could identify a group's incorrect viewpoint
- **D** whether people would conform to a wrong opinion

37 The false participants in Asch's study were there to

- **A** challenge the answers of real participants.
- **B** agree with the answers of other members of the group.
- **C** pressure the real participant to conform by giving wrong answers.
- **D** ask the other participants to conform.

38 When conducting his experiment, Gregory Berns found that

- **A** accepting group decisions created activity in the posterior regions of the brain.
- **B** the participants were the same as those who were used in Asch's experiments.
- **C** physiological explanations had been largely ignored by previous researchers.
- **D** the front area of the brain is responsible for people's tendency to conform.

39 According to the writer, Milgram's experiments were innovative because

- **A** they investigated the relationship between learning and punishment.
- **B** they emphasised the possible negative consequences of accepting authority.
- **C** they were the first to make use of electric shock on unsuspecting participants.
- **D** they were sceptical of the role that memory plays in overall student learning.

40 The teacher who conducted the Third Wave experiment was shocked when students

- **A** came up with punishment for violation.
- **B** strongly opposed the rules.
- **C** organised a group to resist him.
- **D** told on classmates who didn't follow the rules.

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