READING PASSAGE 1

You should spend about 20 minitus on Questions 1-13 , which are based on Reading Passage 1 on page 2 and 3.

Sorry-who are you?

Prosopagnasia is a medical condition that stops people from recognizing people's faces,But how common is it and why does it happen?

It was jacob hodes' first day at college He an si recall pending an enjoyable afternoon being shown around campus by a second year students name Daniel Byrne, who happened to be from his home town, Jocbo then spent the rest of the year ignoring him,
" I never saw him again " he say. Well, I'm sure I waked past him plenty of times, but I just didn't see him . This behavior wasn't intentional. Jacob just couldn't recollect what his fellow student looked like. He had had the same trouble all his life. Friends and relatives would greet him and he would have no idea who they were.

It wasn't until five years ago that it all made sense. That was when Hodes was diagnosed with prosopagnosia, a condition that means he is unable to recognise faces. According to researchers, he is far from alone. In fact the condition is not that uncommon but until a few years ago only a few dozen cases had ever been described, and all of these had been caused by brain injury. Recently, though, researchers identified a second form of face blindness developmental prosopagnosia, which is either present from birth or develops very early in life, in May a team from Harvard University in the US and University College London (UCL) announced the results of a web survey of I, 600 people, suggesting that up to 2 per cent of people have some degree of face blindness. Then in August. Martina Gruter and colleagues at the Institute for Human Genetics in Munster, Germany, similarly reported that 2.5 per cent of 700 secondary school pupils they had tested had trouble recognising faces. The results of the survey took everyone by surprise.

It seems that if you have never known what it is to recognise a face, you don't necessarily know that you are supposed to be able to. Prosopagnosics almost always know that they have trouble recognising people, but they often don't realise that other People have better recognition skills than they do, says Brad Duchaine, a researcher at UCL.

Despite these issues, the majority of developmental prosopagnosics possess strategies that allow them to get around their difficulty, for instance, by recognising hair, clothing or a person's way of speaking so, unless they see a familar person out of context, with a new hairstyle or in difference clothes, they can recognise people just fine. Even so, the discovery of developmental prosopagnosia has attracted attention from neuroscientists keen to discover what is different about the brain of face-blind people. This difference, they believe, could help solve the problem of how the brain deals with information in general: not just visual data. In other words, it may show whether the brain has specialised parts for specific tasks or is more of a general-purpose information process

One issue, however, that will present challenges for researchers is that no two prosopagnosics are the same. Some have problems only with faces, while others have trouble with ordinary everyday objects and, so it turns out, animals which would normally be familiar as well. Some prosopagnetles can train themselves to recognise specific faces others can't even recognise their own in a mirror. When some have been tested they could identify the emotion which was conveyed on another's face, even though the face itself seemed unfamiliar, while for other subjects this was an impossibility. Some cannot recognise the faces of old friends or fellow students but have no trouble telling whether a particular face rom such groups would be attractive to most people. Because of this diversity, working out the cause of prosopagnosia will not be easy.

In Martina Gruter's study, the prosopagnosics who agreed to have their parents and relatives tested reported at least one with the condition. Having looked at 38 cases in seven families, the German team believe they have good evidence that a single gene could be responsible. Duchaine also has some evidence that face blindness could be inherited but thinks other factors might be more significant. He refers to studies of babies born with a condition which means the eye's lens is not dear, and when it's the left one, being unable to see through this eye during the first two months of life is a major risk factor for prosopagnosia.

Whatever the cause, what most prosopagnosics want to know is whether they can do anything to improve their face recognition skills, Joseph Degutis, a graduate student at the University of California, recently reported successfully training a severe developmental prosopagnosic to recognise faces during tests carried out in the laboratory. The subject also reported that recognising faces in everyday life became easier due to the training. Duchaine now plans to attempt to train sufferers to recognise the five people that they most need to know, maybe their immediate family, for example, and essential colleagues. Thomas Gruter Martina Gruter's husband, who also works on her team, however, s not convinced it w work. ' I don't know how you can have more training than you have already had. he says. "Humans already spend all day looking at faces. He also points out that cheating is a possibility during tests and provides an example. One person we studied said that when she was doing the face-recognition test, she memorised the distance between nose and upper lip. She wasn't the only one. So you can perform well in the test and not do so well in real life.

Question 1-7

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

In boxes 1-7 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*

1 Before attending college Jacob was capable of recognising people he knew well.

2 Researchers believe that prosopagnosia may be a growing problem.

3 It is harder to identify developmental prosapagnos a in babies than in young children.

4 A German study seems to support the Harvard and UCL research findings.

5 In general, prosopagnosics are aware that other people can recognise faces more easily than they can.

6 In most cases, prosopagnosics have developed ways to deal with their problem.

7 The study of prosopagnosia may help neuroscientists to treat different kinds of brain injury.

Questions 8-13

Complete the notes below.

Choose **ONE WORD ONLY** from the passage for each answer.

White your answer in boxes 8-13 on your answer sheet.

The challenges for prosopagnosia researchers

Differences in prosopagnosics

As we as being unable to recognize facial features prosopagnosics may also have problems recognizing

- commonly seen **8** .....and objects.
- The **9**..... on someone else face.

Some prosopagnosics can recognize that people are regarded as attractive by others

Causes of prosopagnosia

Prosopagnosia may be caused by

- just one **10**..... according to Martina Gruter
- a defect in the **11**..... eye according to Brad Duchane

Treatment for prosopagnosia

Joseph Degutis patent proved he had been successfully trained to recognize faces inside The **12**.....and in the outside world.

Duchaine's training may allow prosopagnosics to recognise faces belonging to family and workmates.

Thomas Gruter doubts that train wiil work and mentions that **13**..... by some subjects can affect research results

READING PASSAGE 2

You should spend about 20 minutes on **Questions 14-26,** which are based on Reading Passage 2 on pages 6 and 7.

Creative Problem-Solving

Puzzle-solving is an ancient, universal practice, scholars say, and it depends on creative insight,
or a primitive spark. Now, modern neuroscientists are beginning to tap its source

A. In a recent study, researchers at Northwestern University in the United States found that people were more likely to solve word puzzles with sudden insight when they were amused, having just seen a short comedy routine. 'What we think is happening,' said Dr Mark Beeman, a neuroscientist who worked on the study, 'is that the humor, this positive mood, is lowering the brain's threshold for detecting weaker or more remote connections,' which enable people to solve puzzles.

B. This suggests that the appeal of puzzles goes far deeper than the pleasant rush of finding a solution. The very act of doing a puzzle typically shifts the brain into an open, playful state that is itself a pleasing escape. Unlike the social and professional mysteries in the real world, puzzles are reassuringly solvable; but like any serious problem, they require more than mere intellect to crack. 'It's imagination, it's inference, it's guessing; and much of it is happening subconsciously,' said Dr Marcel Danesi, a professor of anthropology at the University of Toronto, Canada. 'It's all about you, using your own mind, without any method or schema, to restore order from chaos,' Danesi said. 'And once you have, you can sit back and say, "Hey, the rest of my life may be a disaster, but at least I have a solution".'

C. For almost a century scientists have used puzzles to study what they call 'insight thinking', the leaps of understanding that seem to come out of the blue. In one experiment, the German psychologist Karl Duncker presented people with a candle, a box of pins, and the task of attaching the candle to a wall. About a quarter of the subjects thought to use the pins to tack the box to the wall as a support - some immediately, and others after failed efforts to tack wax to the wall. According to Duncker, the creative leap seems to have been informed by subconscious cues. In another well-known experiment, psychologists H.G. Birch and H.S. Rabinowitz challenged people to tie together two cords; the cords were hanging from the ceiling of a large room, too far apart to be grabbed at the same time. A small percentage of people solved it without any help, by tying something else to one cord and swinging it like a pendulum so that it could be caught while they held the other cord. In some experiments researchers gave clues to those who were stumped - for instance, by bumping into one of the strings so that it swung. Many of those who then solved the problem said they had no recollection of the clue, though it very likely registered subconsciously.

D. All along, researchers have debated the definitions of insight and analysis, and some have concluded that the two are merely different sides of the same coin. Yet in an authoritative discussion of the research carried out so far, the psychologists Jonathan **W.** Schooler and Joseph Melcher concluded that the abilities most strongly correlated with insight problem-solving 'were not significantly correlated' with solving analytical problems. Either way, creative problem-solving usually requires both analysis and insight. Adam Anderson, a psychologist at the University of Toronto, Canada, argues that although when people are solving problems they may move back and forth between these abilities, they are truly different brain states.

E. At first, studies did little more than confirm that brain areas that register reward spiked in activity when people came up with a solution, that is to say once they had completed a puzzle. However, in a series of recent studies, John Kounios, a psychologist at Drexel University In the United States, has imaged people's brains as they prepare to tackle a puzzle, but before they've seen it. Those whose brains show a particular signature of preparatory activity, one that is strongly correlated with positive moods, turn out to be more likely to solve the puzzles with sudden insight than with trial and error (the clues can be solved either way). Previous research has also found activation of cells in a certain area of the brain when people widen or narrow their attention - say, when they filter out distractions to focus on a difficult task, like concentrating on someone's voice in a noisy room. In the case of insight puzzle-solving, the brain seems to widen its attention, in effect making itself more susceptible to distraction.

F. In the humor study, Beeman had college students solve word-association puzzles after watching a short video showing a stand-up comedian. Beeman found that these students solved more of the puzzles overall, and significantly more by sudden insight, compared with when they'd seen a scary or boring video beforehand. This 'open' state of mind does not only apply to intellectual puzzles. In a study published last year, researchers at the University of Toronto found that people in positive moods picked up more background detail, even when they were told to block out distracting information during a computer task. The findings fit with dozens of experiments linking positive moods to better creative problemsolving. The implication is that positive mood engages this broad, ... attentional state that is both perceptual and visual,' said Anderson. He explains that not only are people in a positive mood able to think more broadly, they are able to notice more visually.

Questions 14-19

Reading Passage 2 has six sections, **A-F**.

Which section contains the following information?

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

NB You may use any letter more than once.

14 a claim that people enjoy the process of doing puzzles as well as finding the answers

15 a review of studies that looked at the relationship between insight and analysis

16 the finding that people were less likely to solve puzzles after viewing uninteresting or disturbing material

17 a comparison between doing puzzles and dealing with life challenges

18 a description of a study where the subjects were given hints by those conducting the research

19 details of a study in which the focus shifted to mental activity before a puzzle is attempted

Questions 20 - 23

Look at the following statements (Questions 20-23) and the list of researchers below.

Match each statement with the correct researcher, **A-E.**

Write the correct letter, **A-E,** in boxes 20-23 on your answer sheet.

20 Solving a puzzle may help people facing difficulties feel better.

21 Two distinctly separate functions of the brain are used when solving puzzles.

22 Some subjects were able to find a solution to the puzzle they were given without knowing how they had done it.

23 Seeing something funny helps people make links that may not be obvious at first.

List of Researchers

A	Mark Beeman
B	Marcel Danesi
C	Karl Duncker
D	Adam Anderson
E	John Kounios

Questions 24 - 26 Complete

the summary below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 24-26 on your answer sheet.

Kounios builds on studies of puzzle-solvers' brain activity

Early studies showed that when people solved a puzzle, the parts of the brain linked to reward were more active. Studies by Kounios reveal that when people are feeling **24** ..... during the preparatory stage, it is more probable that they will use insight to solve puzzles. The part of the brain that is affected is connected with the adjustment of people's attention. When someone is trying to listen to a **25**..... when the general sound level is high, the focus narrows. When people solve puzzles using insight, their focus becomes wider, and they are more open to **26**.....

READING PASSAGE 3

You should spend about 20 minutes on **Questions 27-40,** which are based on Reading Passage 3 on pages 10 and 11

When people are 'deaf' to music

Music has long been considered a uniquely human concept. In fact, most psychologist agree that music is a universal human instinct. Like any ability, however, there is great variation in people's musical competence. For every brilliant pianist in the world, there are several people we refer to as 'tone deaf. It is not simply that people with tone deafness (or 'amusia') are unable to sing in tune, they are also unable to discriminate between tones or recognize familiar melodies. Such a 'disorder' can occur after some sort of brain damage, but recently research has been undertaken in an attempt to discover the cause of congenital amusia (when people are born with the condition), which is not associated with any brain damage, hearing problems, or lack of exposure to music.

According to the research of Dr Isabelle Peretz of the University of Montreal, amusia is more complicated than the inability to distinguish pitches. An amusic (a person who has the condition of amusia) can distinguish between two pitches that are far apart, but cannot tell the difference between intervals smaller than a half step on the Western diatonic scale, while most people can easily distinguish differences smaller than that. When listening to melodies which have had a single note altered so that it is out of key with the rest of the melody, amusics do not notice a problem. As would be expected, amusics perform significantly worse at singing and tapping a rhythm along with a melody than do non-amusics.

The most fascinating aspect of amusia is how specific to music it is. Because of music's close ties to language, it might be expected that a musical impairment may be caused by a language impairment. Studies suggest, however, that language and musical ability are independent of one another. People with brain damage in areas critical to language are often still able to sing, despite being unable to communicate through speech. Moreover, while amusics show deficiencies in their recognition of pitch differences in melodies, they show no impairment in recognizing intonation in speech. For example, amusics who speak tonal languages, such as Chinese, do not report having any difficulty discriminating between words that differ only in their intonation. The linguistic cues inherent in speech make discrimination of meaning much easier for amusics. Amusics are also successful most of the time at detecting the mood of a melody, can idetify a speaker based on his or her voice and can discriminate and identify environmental sounds.

Recent work has been focused on locating the part of the brain that is responsible for amusia. The temporal lobes of the brain, the location of the primary auditory cortex, have been considered. It has long been believed that the temporal lobes, especially the right temporal lobe, are most active when engaged in musical activity, so any musical disability should logically stem from here as well. Because it has been shown that there is no hearing deficit in amusia, researchers moved on to the temporal neocortex, which is where more

sophisticated processing of musical cues was throught to take place. New studies, however, have suggested that the deficits in amusics are tocated outside the auditory cortex. Brain scans of amusic do not show any reaction at all to differences smaller than a half step. When changes in tones are large, their brains ovetreact, showing twice as much activity on the right side of the brain as a normat brain hearing the same thing. These differences do not occur in the audtory cortex, indicating again that the deficits of amusia jie not in hearing impament, but in higher processing of melodies.

So what does this all mean? Looking only at the research of Peretz in the field of neuropsychology of music, it would appear that amusia is some sort of disorder. As a student of neurobiology, however, I am skeptical. Certainly the studies by Peretz that have found significant differences between the brains of so-called amusics and normal brains are legitimate. The more important question now becomes one of normality,
Every trait from skin color to intelligence to mood exists on a continuum - there is a great deal of variation from one extreme to the other. Just because we recagnize that basic musical ability is something that the vast majority of peogle have, this doesn't mean that the lack of it is abnormal.

What makes an amusic worse off than a musical prodigy? Musical abiity is cuturally valued, and may have been a factor in survival at one point in human history, but it does not seem likely that it is being selected for or an evolutionary scale any longer. Darwin believed that music was adaptive as a way of finding a mate, but who needs to be able to sing to find a partner in an age when it is possible to express your emotions through a song on your iPod?

While the idea of amusia is interesting, it seems to be just one end of the continuum of innate musical ability. Comparing this 'disorder' to learning disorders like a specific language impairment seems to be going too far. Before amusia can be declared a disability, further research must be done to determine whether lack of musical abilit is actually detrimental in any way. If no disadvantages can be found to having amusia, ther it is no more a disability than having poor fashion sense or bad handwriting.

Questions 27-31

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

Write the correct letter in boxes 27-31 on your answer sheet.

27 What does the writer tell us about people with tone deafness (amusia) in the first paragraph?

- **A** They usually have hearing problems.
- **B** Some can play a musical instrument very well.
- **C** Some may be able to sing well-known melodies.
- **D** They have several inabilities in regard to music.

28 What is the writer doing in the second paragraph?

- **A** outlining some of the factors that cause amusia
- **B** summarising some findings about people with amusia
- **C** suggesting that people with amusia are disadvantaged
- **D** comparing the singing ability of amusics with their sense of rhythm

29 What does the writer say about the relationship between language ability and musical ability?

- **A** People who are unable to speak can sometimes sing.
- **B** People with amusia usually have language problems too.
- **C** Speakers of tonal languages like Chinese rarely have amusia.
- **D** People with amusia have difficulty recognising people by their voices.

30 In the third paragraph, the writer notes that most amusics are able to

- **A** learn how to sing in tune.
- **B** identify a song by its tune.
- **C** distinguish a sad tune from a happy tune.
- **D** recognise when a singer is not singing in tune.

31 What is the writer doing in the fourth paragraph?

- **A** claiming that amusics have problems in the auditory cortex
- **B** outlining progress in understanding the brains of amusics
- **C** proving that amusia is located in the temporal lobes
- **D** explaining why studies of hearing are difficult

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 Peretz's research suggesting that amusia is a disorder is convincing.

33 People with musical ability are happier than those without this ability.

34 It is inappropriate to consider amusia as a real disorder.

35 People with amusia often have bad handwriting.

Questions 36 - 40

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

Write the correct letter, **A-H**, in boxes 36-40 on your answer sheet.

36 The reason why some people are born with amusia is

37 One of the difficulties amusics experience is

38 For amusics, discrimination of meaning in speech is

39 Certain reactions in the brain of an amusic are

40 In most cultures, musical ability is

A	an inability to hear when spoken language rises and falls.
B	considered to be desirable.
C	an inability to follow the beat of music.
D	not a problem.
E	not yet well understood.
F	a result of injury to the mother.
G	more marked than with other people.
H	associated with intelligence.