READING PASSAGE 2

*You should spend about 20 minutes on **Questions 17–32**, which are based on Reading Passage 2 below.*

Why Do We Need Sleep?

A According to the United States (U.S.) Centers for Disease Control and Prevention (CDC), more than 80 million American adults are chronically sleep deprived, meaning they sleep less than the recommended minimum of seven hours a night. The resulting fatigue contributes to more than a million auto accidents each year, as well as to a significant number of medical errors. Even small adjustments in sleep can be problematic. On the Monday after a daylight-saving time change in the U.S.—when the clocks are moved ahead one hour—there is a 24 percent increase in heart attacks and a jump in fatal car crashes, compared with other Mondays.

B During their lifetimes, about a third of Americans will suffer from at least one of the recognized sleep disorders. They range from common sleep disorders to much rarer and stranger conditions such as sleep apnea and restless leg syndrome. For example, in exploding head syndrome, booming noises seem to reverberate in your brain as you try to sleep. Also, people with Kleine-Levin syndrome will, every few years, sleep nearly nonstop for a week or two. However, insomnia is by far the most prevalent of these problems and the main reason 4 percent of U.S. adults take sleeping pills in any given month.

C Evolution endowed us with sleep that is flexible in its timing and easily disturbed, so that attention can be directed to higher priorities. The brain has an automatic override system that can wake us in all stages of sleep when it perceives an emergency like the cry of a child. But the problem is that, in the modern world, our ancient innate wake-up call is constantly triggered by something that is non-life-threatening, like worrying before an exam or the unexpected sound of a car alarm. Before the Industrial Revolution, which brought us alarm clocks and fixed work schedules, we could often counteract a sleep deficit by simply sleeping in. That is no longer possible.

D The first segment of the brain that begins to fail when we don’t get enough sleep is the prefrontal cortex, the center of decision-making and problem-solving. Dr Chiara Cirelli, a neuroscientist in the U.S., suggests that, ‘Every cognitive function to some extent seems to be affected by sleep loss,’ and she comments that people are often more irritable, moody, and irrational. For instance, sleep-deprived suspects held by the police will often confess to anything in exchange for rest. Other research has also found that people who regularly sleep less than six hours a night have an elevated risk of developing depression, as well as other mental and physical illnesses. In fact, lack of sleep has been directly tied to obesity: without enough sleep, the stomach and other organs overproduce ghrelin, the hunger hormone, causing us to eat more. However, proving a cause-and-effect relationship in this case is challenging because subjecting humans to the necessary experiments is unethical.

E NREM (Non-Rapid Eye Movement) makes up the first of two distinct and repetitive phases of a night's sleep. As we fall into NREM sleep, our brain stays active and begins an editing process—deciding which memories to keep and which ones to ignore. The first of NREM's four stages is called the shallow end of sleep and is characterized by a distinctive regular pattern of brain activity, as shown on an EEG (electroencephalogram) device—a machine that measures electrical impulses. In stage two, the EEG measures electric sparks that strike the cerebral cortex (grey matter covering the outer layer of the brain) in regular half-second intervals. Researchers believe that this electrical activity helps the cortex preserve and store recently acquired information. Stages three and four have been described as a deep, coma-like sleep that is as essential to our brain as food is to our body. In stage three, big, rolling waves of brain activity as measured on an EEG are present less than half the time; in stage four, more than half the time. It's in this deep sleep that our cells produce most growth hormone, which is needed throughout life to service bones and muscles.

F REM (Rapid Eye Movement) sleep was at first believed to be only a variation of a stage in NREM sleep, and not particularly significant. However, once scientists documented the distinctive eye movements in REM, and found that virtually all dreaming takes place during this period, REM sleep was recognized as the second major phase of sleep. Today, scientists believe that the content of our approximately two hours of dreams each night in REM sleep is important in the processing of new memories. Some sleep theorists argue that REM sleep is when we are our most intelligent, insightful, creative, and free. It's when we truly come alive. 'REM sleep may be the thing that makes us the most human, both for what it does for the brain and body, and for the sheer experience of it,' says Professor Michael Perlis.

G The problem of sleep loss is not easily solved—whether by power naps or pharmaceuticals. Dr Jeffrey Ellenbogen, a sleep scientist at Johns Hopkins University in the U.S., argues, 'It's tempting to manipulate sleep with drugs or devices, but we don't yet understand sleep enough to risk artificially manipulating the parts.' Dr Ellenbogen and other experts argue against shortcuts, especially the notion that we can mostly do without sleep. In fact, Dr Steven Lockley, of Brigham and Women's Hospital in Boston, suggests that sleep may be more essential to us than food.

Questions 17–23

*Reading Passage 2 has seven paragraphs, **A–G**.*

Which paragraph contains the following information?

*Write the correct letter, **A–G**, in boxes 17–23 on your answer sheet.*

***NB** You may use any letter more than once.*

17 an example of how sleeplessness can influence a person accused of a crime

18 a description of recordings of different types of brain activity during sleep

19 a description of how present-day society interrupts sleep

20 information about the relationship between being overweight and sleep

21 a suggestion that medication is an ineffective solution for sleeping problems

22 a discovery that changed ideas about how sleep is understood

23 examples of the life-threatening consequences of inadequate sleep

Questions 24 and 25

*Choose **TWO** letters, **A–E**.*

Write the correct letters in boxes 24 and 25 on your answer sheet.

Which **TWO** of these statements describe characteristics of NREM sleep?

- **A** NREM sleep is important for maintaining brain function.
- **B** NREM sleep consists of two distinct parts.
- **C** The brain remains passive throughout NREM sleep.
- **D** Each stage of NREM sleep has a unique EEG pattern.
- **E** Hormones are released continuously throughout NREM sleep.

Questions 26 and 27

*Choose **TWO** letters, **A–E**.*

Write the correct letters in boxes 26 and 27 on your answer sheet.

Which **TWO** of these statements describe the characteristics of REM sleep?

A The REM stage is the longest phase of sleep.
B REM sleep can be identified by an unusual physical feature.
C REM sleep is important for removing unpleasant memories.
D REM sleep is another part of NREM sleep.
E Some scientists consider REM sleep to be a source of human innovation.

Questions 28–32

Complete the sentences below.

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

Write your answers in boxes 28–32 on your answer sheet.

28 According to the CDC, lack of sleep leads to _____, which is often a factor in car crashes.

29 The most common sleep disorder in the U.S. is _____.

30 The brain responds to any type of _____ by activating a built-in alarm.

31 Researchers claim that routinely sleep-deprived people are more likely to be obese and suffer from illnesses like _____.

32 The processing of new memories is crucially linked to our _____ during sleep.

一、配对信息（Q17–23）

题号	答案	题干翻译	精确定位句（段落）	定位句翻译	详细解释
17	**D**	举一个失眠如何影响被指控犯罪者的例子	“*For instance, sleep-deprived suspects held by the police will often confess to anything in exchange for rest.*”（**第 D 段**）	例如，被警察拘留的睡眠不足的嫌疑人常常会为了得到休息而“承认一切”。	明确说到“嫌疑人（suspects）”在睡眠剥夺下更容易招供，正是被指控犯罪者受影响的“例子”。
18	**E**	描述如何记录不同类型的睡眠期脑活动	“*…as shown on an EEG… / In stage two, the EEG measures electric sparks… / In stage three… in stage four…*”（**第 E 段**）	通过脑电图（EEG）显示规律的脑活动；第二阶段 EEG 测到“电火花”；第三、四阶段出现大而起伏的脑波并用“少于一半/多于一半时间”加以区分。	连续用 EEG 刻画各阶段脑活动与波形差异，这是“记录不同脑活动类型”的直接描述。
19	**C**	描述当代社会如何打断睡眠	“*…our ancient innate wake-up call is constantly triggered by something that is non-life-threatening…*” / “*Before the industrial revolution… we could… sleep in. That is no longer possible.*”（**第 C 段**）	我们古老的唤醒系统如今常被非致命的事务触发；工业革命前可以“睡个回笼觉”来补救，但现在已不可能。	当代的考试焦虑、汽车报警、闹钟与固定作息=现代社会机制对睡眠的持续干扰。
20	**D**	关于超重与睡眠的关系	“*…lack of sleep has been directly tied to obesity…*” / “*…organs overproduce ghrelin, the hunger hormone, causing us to eat more.*”（**第 D 段**）	缺觉与肥胖直接相关；器官过度分泌“饥饿激素”促使进食增加。	明确给出生理通路（ghrelin）解释睡少→更饿→更易肥胖。
21	**G**	提出药物并非解决睡眠问题的有效办法	“*The problem of sleep loss is not easily solved—whether by power naps or pharmaceuticals.*”（**第 G 段**）	睡眠不足的问题并不容易通过“小睡或药物”来解决。	直接否定“药片/捷径”的有效性；后文还反对“可以基本不睡”的想法。
22	**F**	一个改变人们对睡眠理解的发现	“*…once scientists documented the distinctive eye movements in REM, and found that virtually all dreaming takes place during this period, REM sleep was recognized as the second major phase of sleep.*”（**第 F 段**）	科学家记录到 REM 中的“快速眼动”，且几乎所有做梦都发生其间，于是 REM 被承认为第二大睡眠阶段。	这一发现把 REM 从“无足轻重的 NREM 变体”提升为独立主要阶段，改变了原有认识。
23	**A**	睡眠不足带来的危及生命的后果的例子	“*…a 24 percent increase in heart attacks and a jump in fatal car crashes…*” / “*The resulting fatigue contributes to more than a million auto accidents each year.*”（**第 A 段**）	心梗增加 24%，致命车祸上升；由此产生的疲劳每年导致逾百万起交通事故。	“心梗/致命车祸”均为“危及生命”的直接例证。

二、NREM 特点（Q24–25，选两项）

题号	答案	题干翻译	精确定位句（段落）	定位句翻译	选项判定与解释
24–25	**A, D**	哪两项描述了 NREM 的特征？	“*As we fall into NREM sleep, our brain stays active and begins an editing process—deciding which memories to keep…*”（**第 E 段**） / “*The first of NREM's four stages… distinctive regular pattern… / In stage two, the EEG measures… / In stage three… in stage four…*”（**第 E 段**）	进入 NREM 时，大脑保持活跃并进行“记忆编辑”；NREM 有“四个阶段”，且各阶段的 EEG 表现被分别描述。	**A 对**：NREM 中大脑活跃、帮助皮层“保存与存储”新信息＝维持/支持脑功能。**D 对**：文中逐段用 EEG 特征区分阶段，等同于“各阶段有独特 EEG 模式”。**B 错**：NREM 并非“两部分”，而是“四阶段”。**C 错**：大脑并非“被动”，而是“保持活跃”。**E 错**：激素在“深睡阶段（3/4）产生最多”，不是“NREM 全程持续”。

三、REM 特点（Q26–27，选两项）

题号	答案	题干翻译	精确定位句（段落）	定位句翻译	选项判定与解释
26–27	**B, E**	哪两项描述了 REM 的特征？	“*…documented the distinctive eye movements in REM…*”（**第 F 段**） / “*Some sleep theorists argue that REM sleep is when we are our most intelligent, insightful, creative, and free.*”（**第 F 段**）	REM 以“特有的眼球快速运动”识别；一些理论家认为 REM 是我们最聪明、最有洞见、最具创造力的时刻。	**B 对**：REM 可由“独特眼动”识别＝“不寻常的生理特征”。**E 对**：强调“创造力、洞见”＝人类创新的来源。**A 错**：文中未说“REM 是最长阶段”。**C 错**：未提“移除不愉快记忆”，只说“处理新记忆”。**D 错**：REM 并非 NREM 的一部分，而是“第二大阶段”。

四、句子填空（Q28–32，每题一词）

题号	答案	题干翻译	精确定位句（段落）	定位句翻译	解释
28	**fatigue**	CDC称，缺觉会导致_____，而这常是车祸因素。	“*The resulting **fatigue** contributes to more than a million auto accidents each year.*”（**第A段**）	因缺觉产生的**疲劳**每年导致逾百万起车祸。	题干的“car crashes factor”与原文“fatigue contributes to auto accidents”精准对应。
29	**insomnia**	美国最常见的睡眠障碍是_____。	“*However, **insomnia** is by far the most prevalent of these problems…*”（**第B段**）	然而，**失眠**是最常见的问题。	直接给出“最普遍（prevalent）”。
30	**emergency**	大脑对任何类型的_____都会启动内置警报。	“*…can wake us in all stages of sleep when it perceives an **emergency**.*”（**第C段**）	当大脑感知到**紧急情况**时，在任何睡眠阶段都能把我们唤醒。	“automatic override system＝内置警报”，关键词即 **emergency**。
31	**depression**	研究者称，经常睡眠不足者更易肥胖并患上如_____之类的疾病。	“*…have an elevated risk of developing **depression**, as well as other mental and physical illnesses.*”（**第D段**）	睡少者更易患**抑郁症**以及其他身心疾病。	空格要求“如……之类的（like）”的例子，文中点名 **depression**。
32	**dreams**	新记忆的加工与我们在睡眠中的_____密切相关。	“*…the content of our approximately two hours of **dreams** each night in REM sleep is important in the processing of new memories.*”（**第F段**）	我们每晚约两小时的**梦**内容对新记忆加工很重要。	题干提示“during sleep”，与F段“dreams in REM sleep”一致。