READING PASSAGE 3

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

The Exploration of Mars

A In 1877, Giovanni Schiaparelli, an Italian astronomer, made drawings and maps of the Martian surface that suggested strange features. The images from telescopes at that time were not as sharp as today's. Schiaparelli said he could see a network of lines, or *canali*. In 1894, an American astronomer, Percival Lowell, made a series of observations of Mars from his own observatory at Flagstaff, Arizona, U.S.A. Lowell was convinced a great network of canals had been dug to irrigate crops for the Martian race. He suggested that each canal had fertile vegetation on either side, making them noticeable from Earth. Drawings and globes he made show a network of canals and oases all over the planet.

B The idea that there was intelligent life on Mars gained strength in the late 19th century. In 1898, H. G. Wells wrote the science-fiction classic *The War of the Worlds* about an invading force of Martians who try to conquer Earth. They use highly advanced technology (advanced for 1898) to crush human resistance. In 1917, Edgar Rice Burroughs wrote the first in a series of 11 novels about Mars. Strange beings and rampaging Martian monsters gripped the public's imagination. A radio broadcast by Orson Welles on Halloween night in 1938 of *The War of the Worlds* caused widespread panic across America; people ran into the streets in their pyjamas—millions believed the dramatic reports of a Martian invasion.

C Probes are very important to our understanding of other planets. Much of our recent knowledge comes from these robotic missions into space. The first images sent back from Mars came from Mariner 4 in July 1965. They showed a cratered and barren landscape, more like the surface of our Moon than Earth. In 1969, Mariners 6 and 7 were launched and took 200 photographs of Mars's southern hemisphere and pole on fly-by missions, but these revealed little more information. In 1971, Mariner 9 became the first spacecraft to orbit the planet, circling every 12 hours. In 1975, the U.S.A. sent two Viking probes, each with an orbiter and a lander. The landers had sampler arms to scoop up Martian rocks and carried out experiments to try to find signs of life. Although no life was found, they sent back the first colour pictures of the planet's surface and atmosphere from pivoting cameras.

D A Martian meteorite found on Earth raised fresh doubts about the above analysis. Meteorite ALH 84001 was discovered in December 1984 in Antarctica by members of the ANSMET project. The sample was ejected from Mars about 17 million years ago and spent 11 000 years in, or on, Antarctic ice sheets. NASA's compositional analysis revealed a kind of magnetite that on Earth is only found in association with certain micro-organisms. Some structures resemble the mineralised casts of terrestrial bacteria and their appendages, fibrils or by-products occurring in the rims of carbonate globules and pre-terrestrial aqueous-alteration regions. The size and shape of the objects are consistent with Earthly fossilised nanobacteria, but the very existence of nanobacteria is still controversial.

E In 1965, the Mariner 4 probe discovered that Mars had no global magnetic field to protect the planet from potentially life-threatening cosmic and solar radiation; observations made in the late 1990s by Mars Global Surveyor confirmed this discovery. Scientists speculate that the lack of magnetic shielding helped the solar wind blow away much of Mars's atmosphere over several billion years. After mapping cosmic-radiation levels at various depths on Mars, researchers concluded that any life within the first several metres of the planet's surface would be killed by lethal doses of radiation. In 2007 it was calculated that DNA and RNA damage would limit life on Mars to depths greater than 7.5 metres below the surface. Therefore, the best places to look for life may be subsurface environments that have not yet been studied. The disappearance of the magnetic field may have played a significant role in Martian climate change. According to scientists' evaluation, Mars's climate gradually transitioned from warm and wet to cold and dry after the magnetic field vanished.

F NASA's recent missions have focused on another question: whether Mars had lakes or oceans of liquid water on its surface in the ancient past. Scientists have found hematite, a mineral that forms only in the presence of water. Thus, the 2004 Mars Exploration Rovers were designed not to look for present or past life, but for evidence of ancient liquid water. Because of Mars's current low atmospheric pressure and temperature, liquid water cannot persist at the surface except, briefly, at the lowest shaded elevations. In March 2004, NASA announced that its rover Opportunity had discovered evidence that Mars was once a wet planet. This raised hopes that evidence of past life might still be found. Later the Mars Express orbiter detected huge reserves of water-ice at Mars's south pole in January 2004.

G Researchers from the Center for Astrobiology (Spain) and the Catholic University of the North in Chile have found an *oasis* of micro-organisms two metres below the surface of the Atacama Desert. SOLID, a life-detection instrument, could be used in environments similar to Martian sub-soil. "We have named it a *microbial oasis* because we found micro-organisms developing in a habitat rich in rock salt and other highly hygroscopic compounds that absorb water," explained Víctor Parro of the Center for Astrobiology. "If similar microbes, or their remains, exist on Mars under comparable conditions, we could detect them with instruments like SOLID," Parro added.

H Even more intriguing is an alternative scenario proposed by the Spanish scientists. If samples on Mars were found to use DNA—as Earthly life does—it would be extremely unlikely that such a specialised, complex molecule could have evolved independently on two planets. This would indicate a common origin for Martian and Earth life. Life based on DNA might have appeared first on Mars and then spread to Earth, where it evolved into the myriad plants and creatures alive today. If that proved true, we would face a startling conclusion: we are all Martians. If not, we must continue the search for other signs of life.

Questions 27–32

*The reading passage has eight paragraphs, **A–H**.*

Which paragraph contains the following information?

*Write the correct letter, **A–H**, in boxes 27–32 on your answer sheet.*

27 Martian evidence found on Earth

28 Mars and Earth may share the same origin of life

29 Detailed depiction of large-scale agricultural constructions

30 A project that aims to detect life under conditions similar to those on Mars

31 Mars has undergone drastic climatic transformation

32 Scientific attempts to locate liquid water on Mars

Questions 33–36

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

Write your answers in boxes 33–36 on your answer sheet.

33 How did Percival Lowell describe Mars in this passage?

A Arizona provides the perfect location for observation.
B The canals of Mars are wider than those on Earth.
C There are clear traces of water and agriculture similar to Earth's.
D Active, mobile Martian creatures were seen through telescopes.

34 How did people change their view of Mars from the 19th century onwards?

A They experienced a real Martian attack.
B They absorbed new ideas through literary works.
C They learned new concepts by listening to a famous radio programme.
D They attended public lectures given by well-known writers.

35 According to the probes sent in the 1960s, which statement about Mars is correct?

A Its landscape is full of rocks and rivers.
B It appeared far less dynamic than Earth.
C It contained exactly the same substances as the Moon.
D Images differed completely from those taken by later probes.

36 What is the implication of the project using the technology called SOLID in the Atacama Desert?

A It could be employed to explore organisms under Martian-like conditions.
B This technology could not be used to identify life in environments similar to Mars.
C The Atacama Desert is the only place on Earth that suits such organisms.
D Life has not yet been found anywhere in the Atacama Desert.

Questions 37–40

Do the following statements agree with the information given in Reading Passage 3?

In boxes 37–40 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*

37 According to *The War of the Worlds*, Martian technology surpassed that of humans in every field at the time.

38 The evidence supplied by the Viking probes has never been challenged.

39 Analysis of a meteorite from Mars discovered a substance associated with certain germs.

40 According to Víctor Parro, their project will be sent to Mars once DNA-based life has been identified on Earth.

Questions 27 – 32（段落信息匹配）

题号	正确段落	关键定位句	解释
27	**D**	“A Martian meteorite found on Earth raised fresh doubts…”	段 D 讲到在地球上发现来自火星的陨石并进行分析，属于“在地球上发现的火星证据”。
28	**H**	“…we would face a startling conclusion: **we are all Martians**.”	段 H 提出若火星样品也含 DNA，人类与火星生命可能同源。
29	**A**	“He suggested that each canal had fertile vegetation on either side… Drawings and globes he made show **a network of canals and oases** all over the planet.”	详细描绘火星上大规模“运河—绿洲”农业工程。
30	**G**	“**SOLID**, a life-detection instrument, could be used in environments similar to Martian sub-soil.”	介绍西班牙/智利团队在阿塔卡马沙漠用 SOLID 探测生命的项目。
31	**E**	“Mars’s climate gradually transitioned from **warm and wet to cold and dry** after the magnetic field vanished.”	明确说明火星经历了剧烈气候转变。
32	**F**	“NASA’s recent missions focused on … whether Mars had **lakes or oceans of liquid water** … Opportunity discovered evidence that Mars was once a wet planet.”	段 F 讨论寻找火星液态水的科学尝试。

Questions 33 – 36（选择题）

题号	正确答案	定位 & 解析
33	**C**	段 A：Lowell 坚信运河用于“**irrigate crops**”，两侧有肥沃植被——即认为存在类似地球的水与农业痕迹。
34	**B**	段 B：19 世纪末起，公众通过 **H.G. Wells 的小说及后续文学作品**改变了对火星的想象。选项 B 概括为“通过文学作品吸收新观点”。
35	**B**	段 C：Mariner 4 的照片显示火星“a **cratered and barren landscape**, more like … the Moon than Earth.” → 说明火星 **明显不如地球充满活力**。
36	**A**	段 G：Parro 解释 SOLID 可应用于“environments similar to Martian sub-soil”，暗示其可用于火星类环境下探测生命。

Questions 37 – 40（判断题）

题号	判断	关键定位句	解析
37	**NOT GIVEN**	段 B 仅说火星人使用“highly advanced technology”，并未提到“**在每个领域**全面超越人类”。信息不足，故选 NG。	
38	**FALSE**	段 D：“A Martian meteorite … **raised fresh doubts about the above analysis**.” 这些“分析”即 1975 年 Viking 未发现生命的结论 ⇒ Viking 证据 **被质疑过**。	
39	**TRUE**	段 D：NASA 发现的 **magnetite only found in association with certain micro-organisms**，正与细菌相关物质吻合。	
40	**NOT GIVEN**	段 G：Parro 仅说若火星存在类似微生物，**可用 SOLID 探测**，并未提及“等到在地球发现 DNA-型生命后再送往火星”。	