

MESTRADO EM CIÊNCIAS DA SAÚDE 2019

Prova de Inglês

Quarta-feira dia 26 de setembro de 2018

08h00 – 11h00

PART 1

Please answer Questions 1-10 with reference to Text 1. There is one and only one best answer to each question.

For Questions 1-8, indicate which of paragraphs A to L in the article contains information on the subject(s) mentioned in each question. Some paragraphs are not used but no paragraph appears more than once.

- Q1. A recalibration of some important scientific measurements
- Q2. Two studies that may shed light on our understanding of the universe
- Q3. Three Asian space missions
- Q4. The possibility of providing more exact dates for events in human prehistory
- Q5. Globally available tools for the visualization of the effects of high temperatures on matter
- Q6. Political uncertainties on both sides of the Atlantic
- Q7. Two ongoing legal disputes
- Q8. An event staged by a Californian politician

Q9. The phrase ‘the country’ in Paragraph “H” refers to

- A. Brexit
- B. rural parts of England
- C. the European Union
- D. the UK

Q10. The words ‘must actually’ and ‘could eventually’ in Paragraph K can be replaced by which of the following pairs of terms respectively without significantly altering the intended meaning?

- A. ‘will one day’ and ‘can sometimes’
- B. ‘should promptly’ and ‘may occasionally’
- C. ‘have to really’ and ‘might one day’
- D. ‘ought to truly’ and ‘should regularly’

What to look out for in 2018

12 | NATURE | VOL 553 | 4 JANUARY 2018

COMPILED BY ELIZABETH GIBNEY

Moon missions, ancient genomes and a publishing showdown are set to shape the year.

A. COSMIC DATA

Fast radio bursts could become much less mysterious when the Canadian Hydrogen Intensity Mapping Experiment (CHIME) begins full operations this year. Astronomers hope to use CHIME to observe tens of these phenomena every day, boosting the current tally of just a few dozen in total. In April, astronomers will pounce on the second data set from the European Space Agency's Gaia mission, which will reveal the position and motion of more than one billion stars in the Milky Way. The data could help to improve our understanding of the spiral structure of the Galaxy.

B. ANCIENT AMERICANS

Results from a slew of ancient-genome studies expected in 2018 could help to explain how humans spread across the Americas. Scientists hope to narrow down estimates of when and how people expanded into the region beginning around 15,000 years ago, and to clarify the timing and routes of subsequent migrations. The work might also help to explain the genetic diversity seen in today's Native American populations.

C. SCIENTIFIC-UNIT REVAMP

After decades of work, the redefinition of four units of measure should get the go ahead in late 2018. At the General Conference on Weights and Measures in November, delegates from 58 countries will vote on adopting new definitions of the ampere, the kilogram, the kelvin and the mole. These will be based on exact values of fundamental constants, rather than on arbitrary or abstract definitions. If approved, the changes should take effect in May 2019.

D. TO THE MOON AND BEYOND

While NASA works on US President Donald Trump's order to send astronauts back to the Moon, two other space agencies will attempt to land rovers on the lunar surface. In early 2018, India's Chandrayaan-2 will mark the country's first attempt at a controlled landing in space. Then, in December,

China's Chang'e-4 will become the first probe to target the far side of the Moon. Elsewhere in the Solar System, the Japan Aerospace Exploration Agency's Hayabusa-2 should reach the primitive Ryugu asteroid by July, and NASA's Osiris-Rex is set to reach the asteroid Bennu in late 2018. Both will return samples to Earth in the 2020s.

E. CANCER'S BIGGER PICTURE

Insights into the genes that regulate cancer could emerge this year as scientists pore over the first large-scale multiple-cancer sequencing effort of whole genomes. They will also get results from another large sequencing project, the Cancer Genome Atlas, which will release its analysis of the protein-coding regions — known as the exome — of 33 types of tumor.

F. CLIMATE LANDMARKS

Countries that have signed on to the 2015 Paris climate agreement will outline how much progress they have made towards meeting their individual commitments to reduce greenhouse-gas emissions — all in the hope of holding the average global temperature to 1.5–2°C above pre-industrial levels — as part of a report called the Facilitative Dialogue 2018. The Intergovernmental Panel on Climate Change will also release a special report outlining the consequences of a 1.5-degree temperature increase. And in September, California Governor Jerry Brown will host a major climate conference in support of the Paris agreement.

G. EXTREME IMAGING

Expect a raft of studies on how matter evolves under extreme conditions, such as in a planet's core. New tools at X-ray free-electron laser (XFEL) facilities worldwide will enable scientists to image samples changing under high temperature and pressure. Biological and chemical reactions could also become cheaper to study when the first tabletop XFEL facilities open, at the German Electron Synchrotron near Hamburg and Arizona State University in Tempe.

H. POWER PLAY

Midterm elections are approaching in the United States. History suggests that whichever party controls the White House — in this case, the Republicans — is likely to lose seats in Congress. But it's not clear whether Democrats will be able to flip enough positions in the House of Representatives or the Senate to gain a majority in either chamber. Eyes will also be on the record number of scientists running for local, state and federal offices. Elsewhere, the United Kingdom will enter phase two of Brexit negotiations to determine the nation's scientific collaboration with the European Union after **the country** leaves the bloc in 2019.

I. SPACE-INDUSTRY BATTLES

Up to five teams competing for the US\$30-million Google Lunar XPrize have until 31 March to land and maneuver the first privately funded rover on the Moon, then beam back images. And aerospace firms Boeing and SpaceX plan to launch their first crewed flights to the International Space Station for NASA by November.

J. DISEASE TREATMENTS

Efforts to bring gene-editing tools such as CRISPR-Cas9 to the clinic are growing. The first phase I trial of CRISPR in people — editing immune cells to tackle lung cancer — will end in April. Firms including Locus Biosciences in Research Triangle

Park, North Carolina, and Eligo Bioscience in Paris will work towards trials using engineered viruses called bacteriophages to harness the CRISPR system against antibiotic-resistant bacteria. And the first trial using induced pluripotent stem (iPS) cells to treat Parkinson's disease is set to begin in Kyoto, Japan, by the year's end.

K. PARTICLE SURFING

It's crunch time for a new method of accelerating particles. Scientists with the AWAKE experiment at CERN, Europe's particle-physics lab near Geneva, Switzerland, have shown that the principle behind a proposal to accelerate electrons on a wave of plasma is sound. Now, they **must actually** do it. If successful, the technique **could eventually** lead to smaller and cheaper colliders.

L. OPEN ACCESS

Who will blink first in the stand-off between German scientists and publishing giant Elsevier? Around 200 German institutions will lose access to Elsevier journals from 1 January until the sides can reach an agreement in a long-running battle over subscription prices. Open-access advocates will also watch the fate of the website Sci-Hub — which provides unauthorized free access to millions of paywalled papers — after a US court order in November shut down some of its domains.

PART 2

Please answer Questions 11 to 20 with reference to Text 2. There is one and only one best answer to each question.

Q11 It can be inferred from the subtitle that

- A. people are talking about the pros and cons of measles vaccination again nowadays
- B. there have been no cases of measles in recent years
- C. many contagious and preventable diseases are now on the rise
- D. vaccination can cause some people to develop measles

Q12 According to Paragraph 1,

- A. US health officials are to blame for fomenting the anti-vaccination movement
- B. US health authorities had eliminated all childhood diseases by the turn of the century
- C. a rash on the back is not a typical sign of measles
- D. the view that the measles vaccine is harmful to children is unfounded

Q13 Which of the following statements is true, according to Paragraph 2?

- A. One of the individuals who contracted measles at Disneyland had already been vaccinated
- B. Seventeen US States had no vaccination program to prevent the spread of the disease
- C. The California Center for Infectious Diseases constantly monitors foreigners visiting Disneyland
- D. Six out of every seven visitors to Disneyland are infected with the measles virus

Q14. In the phrase ‘in the places where cases have popped up’ in the first sentence of Paragraph 3, the phrasal verb ‘popped up’ implies that

- A. cases of measles have risen dramatically
- B. occurrences of measles have been sudden and unexpected
- C. measles outbreaks were rapidly cleared up
- D. rare cases of measles were exaggerated by social media

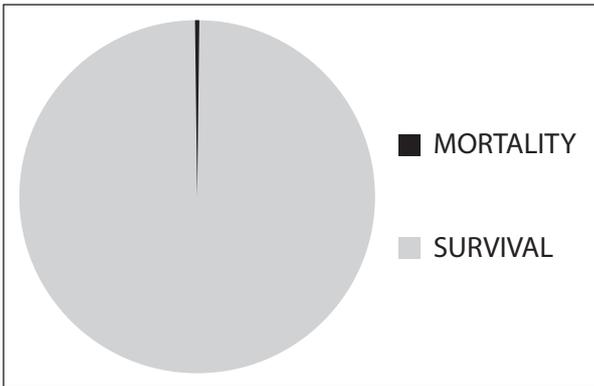
Q15. According to the information given in Box 1,

- A. people suffering from measles can barely breathe
- B. it is possible to contract the measles virus without coming into direct contact with infected individuals
- C. vaccination can safely be administered by spraying the measles virus into the air
- D. the measles vaccine has been 100% safe since 1997

Q16. The word ‘they’ at the end of Paragraph 6 refers to which of the following?

- A. children
- B. parents
- C. vaccines
- D. harm

Q17 The pie chart given below best represents which of the following statements made in Box 2?



- A. One or two out of every 1,000 people with measles will die from the disease.
- B. A person with Ebola will, on average, infect two people.
- C. If no-one is vaccinated, one measles patient will, on average, infect 18 people.
- D. 28% of measles cases in young children require hospitalization.

Q18. Which of the following words could be added to the word ‘be’ in the first sentence of Paragraph 11 without altering the meaning?

- A. wanted
- B. everyone
- C. if
- D. vaccinated

Q19. Which of the following statements is true according to information contained in Paragraphs 7 to 10?

- A. Rand Paul favors vaccination but supports the right of parents not to vaccinate their children.
- B. Nicholas Kristof is opposed to the privatization of vaccination programs.
- C. Only two US states accept religious convictions as a justification for opting out of vaccination programs
- D. All US states are now considering making vaccination compulsory for all with no exemptions

Q20. The case of Rylee Beck is presented in the concluding paragraphs of the article

- A. to warn that children with leukemia pose a health risk to other children visiting Disneyland
- B. to show how parents who refuse to vaccinate their children against measles put others who are unable to be vaccinated at serious risk
- C. to present the fact that Rylee survived the outbreak as an argument in favor of the anti-vaccination movement
- D. to explain why Rylee’s mother thinks that the anti-vaccination movement can help children like Rylee

RETURN OF THE MEASLES

A recent outbreak of the highly contagious but preventable disease has renewed the debate on vaccination

BY PATRICIA SMITH

1. In 2000, American health officials declared that the measles, one of the nastiest and most contagious of all childhood diseases, had been eliminated from the United States. But the celebrations turned out to be premature. The measles is back. Its telltale rash of red spots has shown up in more than 140 new cases as the disease has spread across the country since an outbreak began in December. Health officials blame the resurgence on a growing anti-vaccination movement based on the discredited belief that some vaccines, including the one for measles, are dangerous for children.
2. “We can expect to see many more cases of this preventable disease unless people take measures to prevent it,” says Dr. Gilberto Chavez, the deputy director of the California Center for Infectious Diseases. The outbreak started at Disneyland in Southern California when a visitor infected with the virus passed it on to seven other visitors, six of whom weren’t vaccinated. From there, it spread to 17 states and the District of Columbia.
3. Word that the disease is on the loose has created fear in the places where cases have **popped up**, especially among parents of young children: some have kept babies out of daycare centers, worried they’ll be exposed. People have flooded doctors’ offices to get the vaccination. In Orange County, California, where the outbreak began, schools temporarily banned unvaccinated students from attending class. The fear is justified: Measles spreads through the air (see Box 1) and can cause severe complications. They include deafness, pneumonia, and encephalitis (a swelling of the brain that can be fatal or result in brain damage). Children under 5 are

most likely to suffer complications; almost 1 in 3 cases in young children require hospitalization.

4. Before vaccines for measles became widespread in 1963, millions of Americans were infected annually with 400 to 500 dying each year. Worldwide, there are still about 20 million cases annually, mostly in poorer countries in Asia and Africa; in 2013, about 146,000 people died of measles.

Anti-Vaccine Movement

5. The reason for the current outbreak in the U.S. is that more and more Americans are going unvaccinated. According to the World Health Organization, the measles vaccination rate in 2013 was 91 percent in the United States—lower than in Zimbabwe or Bangladesh. And vaccination rates are much lower in some American communities: in Orange County, for example, some schools report that 50 to 60 percent of their kindergartners aren’t fully vaccinated against measles.
6. The anti-vaccine movement can be traced to a 1998 report in a medical journal that suggested

Box 1

What’s Your Risk?

A person with measles who coughs or sneezes—or even just breathes—can spray the virus into the air in small droplets, which can remain in the air for up to two hours. So if you haven’t been vaccinated, it’s possible to catch measles just by walking into a room where an infected person has recently been. Nine out of 10 unvaccinated people in a room with an infected person will catch measles. People are infectious for about four days before and two days after the appearance of the rash. The vaccine is 97 percent effective—and entirely safe.

a link between vaccines and autism but was later proved false and retracted. (Autism is a developmental disorder that limits a person’s ability to communicate and function.) But many of the parents who avoid vaccines still believe **they** can harm their kids.

7. For public officials the question is how to balance public health with the rights of parents to make decisions for their children. All but two states allow exemptions to vaccination requirements for religious reasons; 20 states allow parents not to vaccinate their children for “philosophical reasons”. The problem health officials point out is that parents’ personal decisions affect

more than their own kids the minute the children leave the house.

8. “You no more have the right to risk others by failing to vaccinate than you do by sending your child to school with a hunting knife.” says New York Times columnist Nicholas Kristof. “Vaccination isn’t a private choice but a civic obligation.”

9. But not everyone sees it that way. Senator Rand Paul of Kentucky, a doctor who says he believes firmly in the benefit of vaccines, has also said they should be entirely voluntary.

10. In the wake of the current epidemic, several states are considering tightening vaccine requirements. Lawmakers in other states have proposed bills giving parents more leeway to refuse vaccinations for their children.

11. But even if everyone wanted to be vaccinated, some can’t **be**, including newborn infants, those with vaccine allergies, and people with medical conditions that leave their immune systems compromised. They depend on everyone around them

Box 2

By the Numbers

If no-one is vaccinated, one measles patient will, on average, infect 18 people. (A person with Ebola will, on average, infect two people.) One or two out of every 1,000 people with measles will die from the disease. 28% of measles cases in young children require hospitalization.

being vaccinated, so the disease can’t spread. The principle is called “herd immunity”.

12. Consider someone like Rylee Beck, a 5-year-old from Orange, California, who’s fighting leukemia and can’t be vaccinated. Rylee’s family was in Disneyland in December when the measles outbreak began.

13. “It just scared us to death,” says Melissa Beck, Rylee’s mother. “We were just holding our breath, hoping nothing was going to come out of it.”

14. Fortunately, Rylee was not infected. Beck says that other parents are always kind and helpful when they see Rylee, frail and sometimes without hair, and learn that she’s fighting cancer. She’s sure that other parents aren’t deliberately putting children like Rylee at risk; they just don’t know any better.

15. “It’s a matter of life and death for these kids,” Beck says. “Maybe that would change these parents’ minds.”

Quarta-feira dia 26 de setembro de 2018

08h00 – 11h00

MESTRADO EM CIÊNCIAS DA SAÚDE 2019

Nome do candidato: _____

RG do candidato: _____

CPF do candidato: _____

Questão	Resposta											
1	A	B	C	D	E	F	G	H	I	J	K	L
2	A	B	C	D	E	F	G	H	I	J	K	L
3	A	B	C	D	E	F	G	H	I	J	K	L
4	A	B	C	D	E	F	G	H	I	J	K	L
5	A	B	C	D	E	F	G	H	I	J	K	L
6	A	B	C	D	E	F	G	H	I	J	K	L
7	A	B	C	D	E	F	G	H	I	J	K	L
8	A	B	C	D	E	F	G	H	I	J	K	L

Questão	Resposta			
9	A	B	C	D
10	A	B	C	D
11	A	B	C	D
12	A	B	C	D
13	A	B	C	D
14	A	B	C	D

Questão	Resposta			
15	A	B	C	D
16	A	B	C	D
17	A	B	C	D
18	A	B	C	D
19	A	B	C	D
20	A	B	C	D