

Name: _____

Date: _____

Answer questions 1–4 according to the passage below.

Antimicrobial resistance arises when microbes evolve mechanisms that protect them from the drugs used to treat infections in humans, animals and plants. Any microbe can acquire it: bacteria, viruses, parasites and fungi alike. Although resistance can emerge naturally through spontaneous mutation and the horizontal transfer of resistant genes, the misuse and improper management of antimicrobials remain its primary drivers. Overuse in both medicine and agriculture increases selective pressure and thereby accelerates the process. Organisms resistant to several drugs at once are known as superbugs. The World Health Organization regards it as one of the foremost global threats to public health, estimating that bacterial resistance was directly responsible for 1.27 million deaths in 2019 and contributed to 4.95 million more. Such infections are harder to treat and often demand costly alternatives whose side effects may be more severe. Unless coordinated measures are taken, international bodies warn that the annual toll could reach ten million by 2050. Preventive practice therefore favours narrow-spectrum antibiotics and improved hygiene. The COVID-19 pandemic, however, diverted both funding and scientific attention elsewhere, intensifying the difficulty.

1. According to the passage, the principal cause of antimicrobial resistance is ----.
 - A) the spontaneous mutation of bacterial genes in isolated environments
 - B) the horizontal transfer of resistant genes between unrelated species
 - C) the reluctance of pharmaceutical companies to develop new compounds
 - D) the misuse and improper management of antimicrobial drugs
 - E) the failure of hospitals to isolate patients carrying superbugs
2. It can be understood from the passage that agriculture matters to resistance because ----.
 - A) farm animals are the only known reservoir of multidrug-resistant organisms
 - B) use outside medicine also raises the selective pressure on microbes
 - C) veterinary drugs are chemically distinct from those prescribed to humans
 - D) resistant genes cannot spread between agricultural and clinical settings
 - E) narrow-spectrum antibiotics are prohibited in livestock production
3. It is stated in the passage that ----.
 - A) bacterial resistance was directly responsible for 1.27 million deaths in 2019
 - B) ten million people had already died of resistant infections by 2019
 - C) resistance affects bacteria but has never been observed in fungi
 - D) alternative therapies for resistant infections are cheaper than standard ones
 - E) the COVID-19 pandemic increased the resources devoted to resistance research
4. Which of the following best describes the author's attitude towards the current situation?
 - A) Dismissive, since the projected figures rest on unreliable modelling
 - B) Optimistic, because narrow-spectrum antibiotics have solved the problem
 - C) Indifferent, as resistance is a natural process beyond human influence
 - D) Approving, given that the pandemic response strengthened surveillance
 - E) Concerned, because a preventable threat has lost attention it needs

Answer questions 5–8 according to the passage below.

A vaccine is a biological preparation that confers active acquired immunity against a particular infectious or malignant disease. It usually contains an agent resembling the microorganism that causes the disease, and is commonly made from weakened or killed forms of that microbe, from its toxins, or from one of its surface proteins. The agent prompts the immune system to treat it as a threat, to destroy it, and to recognise and destroy related microorganisms encountered later. Vaccines may be prophylactic, preventing or moderating a future infection, or therapeutic, combating a disease that has already developed, such as cancer. Vaccination is the most effective method of preventing infectious disease; the widespread immunity it produces is largely responsible for the worldwide eradication of smallpox and for confining polio, measles and tetanus to limited regions. Licensed vaccines now exist for twenty-five preventable infections. The practice has a long history: inoculation against smallpox is recorded in sixteenth-century China, and Lady Mary Wortley Montagu carried the folk method from Turkey to Britain in 1721. The words vaccine and vaccination derive from Variolae vaccinae, the term Edward Jenner coined for cowpox in 1798.

5. According to the passage, what does a vaccine typically contain?
 - A) A synthetic compound with no biological relation to the pathogen
 - B) A live and fully virulent sample of the target microorganism
 - C) An agent resembling the microbe: a weakened or killed form, or a surface protein
 - D) An antibiotic capable of destroying the pathogen on contact
 - E) A hormone that suppresses the activity of the adaptive immune system
6. It can be inferred from the passage that therapeutic vaccines differ from prophylactic ones in that they ----.
 - A) are given after a disease has already developed rather than before
 - B) provide immunity that lasts for the whole of a patient's life
 - C) are the only type that has eradicated a disease worldwide
 - D) rely on surface proteins instead of weakened microbes
 - E) were the earliest form of inoculation to be practised in China
7. It is stated in the passage that the folk practice of smallpox inoculation ----.
 - A) was invented in Britain and later exported to the Ottoman lands
 - B) was first described by Edward Jenner in his 1798 inquiry
 - C) had no effect on the eventual eradication of the disease
 - D) was brought from Turkey to Britain by Lady Mary Wortley Montagu in 1721
 - E) remained unknown outside Europe until the nineteenth century
8. What does the passage mainly focus on?
 - A) A comparison of the side effects reported for modern vaccine types
 - B) The composition, purpose and historical origins of vaccines
 - C) The regulatory obstacles that delay the licensing of new vaccines
 - D) The reasons why smallpox proved easier to eradicate than measles
 - E) The economic burden that vaccination programmes place on states