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## PASSAGE VII

Bacteria can be categorized by how they respond, as indicated by reproduction and growth, to certain temperatures. They are grouped into four categories—psychrophiles, psychrotrophs, mesophiles, and thermophiles—based on their growth response to certain temperatures. Minimal growth temperature is the lowest point at which the bacteria will reproduce. Optimum growth point is the temperature at which the bacteria reproduce most efficiently. Maximum growth point is the very highest temperature to which the bacteria will respond, beyond which the bacteria will not reproduce at all. Table 1 lists the types of bacteria as well as the growth points for each.

Table 2 represents a list of common bacteria and their growth points.

Growth points or ranges (°C)			
Classifications	Minimum	Optimum	Maximum
Psychrophile	below 0	10–15	below 20
Psychrotroph	0–5	15	30
Mesophile	5–25	18–45	30–50
Thermophile	25–45	50–60	60–90

Cardinal growth points (°C)			
Bacteria name	Minimum	Optimum	Maximum
<i>Anoxybacillus flavithermus</i>	30	60	72
<i>Bacillus flavothermus</i>	30	60	72
<i>Clostridium perfringens</i>	15	45	50
<i>Escherichia coli</i>	10	37	45
<i>Listeria monocytogenes</i>	1	34	45
<i>Micrococcus cryophilus</i>	0	15	30
<i>Staphylococcus aureus</i>	10	37	45
<i>Streptococcus pyogenes</i>	20	37	40
<i>Streptococcus pneumoniae</i>	25	37	42

35. The category of bacteria appearing the most frequently in Table 2 is:
- psychrophile.
  - psychrotroph.
  - mesophile.
  - thermophile.
36. The type of bacteria found in Table 2 that does not fit exactly into any of the categories listed in Table 1 is:
- Clostridium perfringens*.
  - Listeria monocytogenes*.
  - Micrococcus cryophilus*.
  - Streptococcus pneumoniae*.
37. Average human body temperature is 40°C. According to Table 2, which of the following bacteria would grow most successfully in the human body?
- Anoxybacillus flavithermus*.
  - Clostridium perfringens*.
  - Escherichia coli*.
  - Listeria monocytogenes*.
38. A new bacteria was discovered by scientists. It reproduces best at 55°C and does not show any new growth if exposed to temperatures above 65°C. This bacteria can most likely be categorized as a:
- psychrophile.
  - psychrotroph.
  - mesotroph.
  - thermophile.

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39. Based on the information in Table 2, which bacteria has the smallest growth range?
- A. *Listeria monocytogenes*.
  - B. *Micrococcus cryophilus*.
  - C. *Streptococcus pneumoniae*.
  - D. *Streptococcus pyogenes*.
40. According to information provided in the passage, *Listeria monocytogenes* stop reproducing at what temperature?
- F.  $>1^{\circ}\text{C}$ , but  $<10^{\circ}\text{C}$
  - G.  $>10^{\circ}\text{C}$ , but  $<34^{\circ}\text{C}$
  - H.  $>34^{\circ}\text{C}$ , but  $<45^{\circ}\text{C}$
  - J.  $>45^{\circ}\text{C}$

**END OF THE SCIENCE REASONING TEST.**  
**STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.**