

GATE XL (Microbiology) questions

Methods in Microbiology

1. Multiple-Choice Question (MCQ)

Which of the following sterilization methods is most suitable for heat-sensitive liquids?

- A) Dry heat sterilization
- B) Autoclaving
- C) Filtration
- D) Radiation

Answer: C) Filtration

2. Multiple-Choice Question (MCQ)

In a spread plate method, the primary purpose of spreading the sample on the agar surface is to:

- A) Allow deep penetration of bacteria into the medium
- B) Ensure even distribution of bacteria for colony isolation
- C) Inhibit the growth of fast-growing microbes
- D) Provide anaerobic conditions for bacterial growth

Answer: B) Ensure even distribution of bacteria for colony isolation

3. Numerical Answer Type (NAT)

A microbiologist prepares a 1:100 dilution of a bacterial culture and plates 0.1 mL onto a nutrient agar plate. After incubation, 150 colonies are observed. Calculate the original bacterial concentration (in CFU/mL) of the undiluted culture.

Answer:

$$\begin{aligned}\text{Original concentration} &= (\text{Colony count} \times \text{Dilution factor}) / \text{Volume plated} \\ &= (150 \times 100) / 0.1 \\ &= 1.5 \times 10^6 \text{ CFU/mL}\end{aligned}$$

4. Multiple-Choice Question (MCQ)

Which of the following staining techniques is used specifically to visualize bacterial endospores?

- A) Gram staining
- B) Acid-fast staining
- C) Schaeffer-Fulton staining
- D) India ink staining

Answer: C) Schaeffer-Fulton staining

5. Multiple-Choice Question (MCQ)

Which of the following media is **selective** for Gram-negative bacteria?

- A) Mannitol Salt Agar (MSA)
- B) MacConkey Agar
- C) Nutrient Agar
- D) Blood Agar

Answer: B) MacConkey Agar

