



AUSTRALIAN INSTITUTE OF MEDICAL AND CLINICAL SCIENTISTS

AIMS Membership Single Discipline Examination – Medical Microbiology

Guide to Study & Suggested Reading List

Areas of knowledge expected from candidates:

For candidates sitting the general examination, the level of knowledge required is at the basic introductory level, but for those sitting the discipline specific examination a more extensive level is required.

- Infectious diseases (and associated organisms) commonly diagnosed by analysis of specimens in a routine microbiology laboratory. There will be a greater emphasis of bacterial diseases to reflect the balance of work in a routine laboratory, but some knowledge of parasitic, fungal and viral diseases is also expected.
- Collection, handling and processing of specimens including minimal criteria for acceptance.
- Normal flora (indigenous flora) or major body sites or absence of normal flora in sterile sites.
- Presumptive identification of major groups of bacteria and fungi based on microscopic and colonial morphology on a variety of common media, including non-selective, selective / differential and chromogenic media, and the use of key basic identification test such as catalase, oxidase and atmospheric growth requirements.
- Selective and differential culture media and the use of such media for the recovery and detection of pathogens from diagnostic specimens.
- The principles of various automated bacterial identification systems.
- Principles of major methods of susceptibility testing i.e., disc diffusion, agar dilution and broth dilution and the relationship between breakpoints, MIC and susceptible/resistant categories.
- Important and rare types of antibiotic resistance in key pathogens e.g., knowing that vancomycin resistance is rare in *S. aureus*. Key multi-resistant organisms e.g., methicillin resistant *S. aureus* (MRSA) and vancomycin resistant *Enterococcus* (VRE).
- Microscopy, including function and maintenance of a modern binocular microscope and use for bright-field, phase-contrast and dark-field microscopy.
- Staining techniques, including Gram stain, Ziehl-Neelsen stain, trichrome or iron haematoxylin.

Recommended Reading List:

- Carroll KC, Pfaller MA, Tenover FC, Archer G, Landry ML, McAdam AJ, Patel R and Priss BS Editors *Manual of Clinical Microbiology*, Wiley.
- Tille P *Bailey & Scott's Diagnostic Microbiology*, Elsevier.
- Procop GW, Church DL, Hall GS, Janda WM, Koneman EW, Schreckenberger PC and Woods GL *Koneman's Color Atlas and Textbook of Diagnostic Microbiology*, Jones & Bartlett Learning.
- Westblade LF, Burd EM, Lockhart SR, Procop GW *Larone's Medically Important Fungi: A Guide to Identification*, Wiley.

- de la Maza LM, Pezzlo MT, Bittencourt CE, Peterson EM *Color Atlas of Medical Bacteriology*, Wiley.

© 2025 The Australian Institute of Medical and Clinical Scientists (AIMS)
reserves the right to make changes to this document. Updates will be
posted to: aims.org.au/membershipinformation/membership-examination.



AUSTRALIAN INSTITUTE OF MEDICAL AND CLINICAL SCIENTISTS

AIMS Membership Single Discipline Examination – Medical Microbiology

Sample Examination Questions

1. Name two (2) common bacterial causes of acute bacterial meningitis in adults (2 marks)
2. During urine microscopy, the numbers of which two (2) cell types are important in routinely diagnosing urinary tract infection? (1 mark)
3. What is the Gram stain morphology of the following organisms: (2 marks)
 - a. *Staphylococcus aureus*
 - b. *Haemophilus influenza*
 - c. *Klebsiella pneumoniae*
 - d. *Corynebacterium diphtheriae*.
4. In relation to antibiotic sensitivity testing, what does the term MIC stand for? (1 mark)
5. For what is VRE an abbreviation? (1 mark)
6. If you have run out of carbon dioxide generating sachets, how else can you easily create a similar atmosphere? (1 mark)
7. What type of haemolysis do you associate with the following organisms: (2 marks)
 - a. *Streptococcus pyogenes*
 - b. *Streptococcus pneumoniae*
 - c. *Streptococcus agalactiae* (Group B *Streptococcus*)
 - d. *Aeromonas hydrophila*.
8. With which respiratory pathogen do you associate the Ziehl-Neelsen stain? (1 mark)
9. Name a faecal pathogen detected by screening faeces for non-lactose fermenting organisms. (1 mark)
10. In a Gram stained smear of a vaginal swab, what is the probable identity of large Gram positive bacilli? (1 mark)
11. List the four (4) reagents of the Gram stain in the order in which they are used. (2 marks)
12. Name two (2) methods for creating an anaerobic atmosphere in a jar. (2 marks)
13. With which pathogenic organism do you associate each of the following diagnostic discs? (2 marks)
 - a. Opctohin
 - b. Novobiocin
 - c. X and V factors
 - d. Bacitracin
14. What blood cell is mainly responsible for eliminating a bacterial infection? (1 mark)