

MRCPath Part 1 in Medical Microbiology & Virology

Extended matching question (EMQ) samples

These sample questions will allow you to become familiar with the style of the questions that will be used in the MRCPath Medical Microbiology & Virology Part 1 Examination. They also serve to illustrate the breadth of the topics that will be covered. Please note that this is not intended to be a “mock” examination and answers are therefore not provided.

Question 1

Option list

- A. Clear soluble phenolic disinfectant (e.g. ‘Hycolin’)
- B. Chlorhexidine
- C. Chloroxylenol disinfectant (e.g. ‘Dettol’)
- D. Downward-displacement autoclave (e.g. 121°C for 15 minutes)
- E. Glutaraldehyde 2% solution
- F. High-vacuum, high-temperature (porous load) autoclave
- G. Hydrogen peroxide 3%
- H. Hypochlorite solution (125 parts-per-million available chlorine)
- I. Isopropanol 70%
- J. Sodium dichloroisocyanurate granules or tablets (e.g. ‘Presept’)

For each of the scenarios below, choose the most appropriate method of disinfection or sterilization from the list of options. Each option may be used once, more than once, or not at all.

1. Hand disinfection prior to a surgical operation
2. Treatment of a colonoscope between patients on an endoscopy list
3. Management of a blood spill from a patient thought to be hepatitis B- positive
4. Decontamination of a stethoscope following use on a patient positive for methicillin-resistant *Staphylococcus aureus* (MRSA)
5. Treatment of a surgical instrument set used in an appendectomy

Question 2

Option list

- A. Amoxicillin
- B. Ceftazidime
- C. Chloramphenicol
- D. Ciprofloxacin
- E. Flucloxacillin
- F. Gentamicin
- G. Nitrofurantoin
- H. Polymyxin B
- I. Tetracycline
- J. Vancomycin

For each of the following resistance mechanisms, select the one which is most frequently associated with one of the antibiotics in the list of options. Each option may be used once, more than once, or not at all.

1. Inactivation by enzymes such as acetyltransferases, phosphotransferases, or adenylyltransferases
2. Production of an altered DNA gyrase which has reduced affinity for the antibiotic
3. Production of a new penicillin-binding protein which has reduced affinity for the antibiotic
4. Inactivation by chromosomally-mediated (constitutive) beta-lactamase enzymes
5. Alteration in the pentapeptide side chain of bacterial peptidoglycan, resulting in failure to bind the antibiotic

Question 3

Option list

- A. Inhaled zanamivir
- B. Intravenous aciclovir
- C. Intravenous ganciclovir
- D. Oral aciclovir
- E. Oral amantadine
- F. Oral ganciclovir
- G. Oral lamivudine
- H. Oral ribavirin and subcutaneous interferon
- I. Oral zidovudine monotherapy
- J. Treatment is not indicated

For each clinical scenario below, select the most appropriate treatment from the list of options. Each option may be used once, more than once, or not at all.

1. 14 week pregnant woman with severe chicken pox pneumonia.
2. HIV patient with newly diagnosed bilateral cytomegalovirus retinitis.
3. 45 year old West African man who is HbeAg positive and has chronic active hepatitis B infection.
4. Bone marrow transplant patient with respiratory symptoms, whose nasopharyngeal aspirate is positive for influenza B by immunofluorescence.
5. 42 year old woman with chronic active hepatitis C infection, confirmed on liver biopsy.

Question 4

Option list

- A. *Acinetobacter baumannii*
- B. *Brucella melitensis*
- C. *Haemophilus parainfluenzae*
- D. *Helicobacter pylori*
- E. *Klebsiella aerogenes*
- F. *Pseudomonas aeruginosa*
- G. *Salmonella enteritidis*
- H. *Shigella sonnei*
- I. *Stenotrophomonas maltophilia*
- J. *Vibrio cholerae*

For each of the following clinical and laboratory scenarios, select the most likely organism from the list of options. Each option may be used once, more than once, or not at all.

1. Meropenem-resistant organism isolated from the sputum of a patient in ICU.
2. Oxidase-positive organism isolated from the aerobic bottle only of a set of blood cultures from a patient with neutropaenic sepsis.
3. Oxidase-negative, multi-antibiotic resistant coccobacillus, isolated from the environment in an ICU.
4. Indole-negative and late lactose fermenter isolated from a child with diarrhoea in a crèche.
5. Short or small bacillus isolated from blood cultures after 5 days from a patient being investigated for pyrexia of unknown origin.

Question 5

Option list

- A. *Calymmatobacterium granulomatis*
- B. *Candida albicans*
- C. *Chlamydia trachomatis*
- D. *Cryptococcus neoformans*
- E. *Haemophilus ducreyi*
- F. Herpes simplex virus, type 2
- G. Human papilloma virus type 6
- H. *Neisseria gonorrhoeae*
- I. *Treponema pallidum*
- J. *Trichomonas vaginalis*

For each of the following clinical scenarios, select the most likely infecting organism from the list of options. Each option may be used once, more than once, or not at all.

1. A 17 year old heterosexual male presents to his general practitioner with a 24 hour history of painful dysuria and a thin urethral discharge. Nothing abnormal is found on examination. A Gram-stained smear of a urethral swab shows numerous pus cells and scattered intra-and extra-cellular Gram-negative diplococci.
2. A 30 year old heterosexual male treated for gonococcal urethritis returns to the surgery 5 days later with a relapse of dysuria and urethral discharge. Bacterial culture of a urethral swab is reported as negative.
3. A 38 year old homosexually-active male presents with a painless ulcer at the anal margin. He has had a steady partner for 5 years and not left the UK during the past 2 years, but had receptive anal intercourse with a new partner 3 weeks ago.
4. A 25 year old female presents with a short history of severe vulvo- vaginal inflammation and whitish discharge. She denies having had intercourse for the past month. Two weeks ago she had an episode of dysuria which was treated by her general practitioner with a 5 day course of amoxicillin.
5. A 25 year old woman presents with dysuria and vaginal soreness. She admits to several similar episodes during the past year. On examination the external genitalia show extensive inflammation with a few vesicular lesions on the periphery.