



UNIVERSITY OF JAFFNA, SRI LANKA
SECOND EXAMINATION FOR MEDICAL DEGREES PART (I)

May 2025

Academic Year 2020/2021

Microbiology - Paper I

Date: 20.05.2025

1.30 pm to 3.00 pm (1½ hours)

Answer all 30 questions

1. Bacterial spores
 - a) are formed in adverse conditions
 - b) do not exhibit measurable metabolic activity
 - c) can be killed by bactericidal antibiotics
 - d) can be killed by autoclaving
 - e) can be killed by 70% alcohol
2. Standard precautions include
 - a) the healthcare worker wearing N95 mask when attending to the patient
 - b) isolating the patient in a separate room
 - c) regular cleaning and disinfection of patient surroundings
 - d) the healthcare worker performing cough etiquette around the patient
 - e) disposing used syringe and needle into sharps bin
3. Gut microbiome
 - a) is influenced by diet
 - b) includes *Salmonella typhi*
 - c) helps in the absorption of nutrients
 - d) can cause infection when their habitat is altered
 - e) is disturbed by broad spectrum antibiotics
4. Innate immune response to viral infections include
 - a) cytotoxic T cells killing virus infected cells
 - b) inhibitory action of interferon
 - c) specific antibodies neutralizing the virus in the blood
 - d) natural killer cells killing virus infected cells
 - e) mucociliary clearance of respiratory viruses
5. Passive immunity is acquired
 - a) through breast milk
 - b) by the foetus through the placenta
 - c) through BCG vaccination
 - d) by receiving toxoid
 - e) by receiving immunoglobulin
6. Co-amoxiclav covers
 - a) *Klebsiella pneumoniae*

- b) *Acinetobacter* spp.
 - c) *Bacteroides fragilis*
 - d) *Haemophilus influenzae*
 - e) methicillin resistant *Staphylococcus aureus* (MRSA)
7. Azithromycin
- a) can be given orally
 - b) can be used in the treatment of infections with *Bacteroides fragilis*
 - c) is used in the treatment of gonorrhoea
 - d) is contraindicated in pregnancy
 - e) is used in the treatment of *Mycoplasma pneumoniae* pneumonia
8. Antibiotics used in the treatment of infections with *Pseudomonas aeruginosa* include
- a) clindamycin
 - b) gentamicin
 - c) ceftriaxone
 - d) amikacin
 - e) ciprofloxacin
9. A 38-year-old man presented with a localized swelling on his left foot over the last few months. On examination, multiple pus discharging sinuses were seen on the swelling. Eumycetoma was one of the differential diagnoses. State whether the following are true or false regarding eumycetoma.
- a) The causative agent is a bacteria.
 - b) This infection occurs commonly in farmers.
 - c) The main source of infection is human.
 - d) The causative agent cannot be confirmed by culture.
 - e) The first choice antimicrobial is trimethoprim-sulfamethoxazole.
10. *Candida albicans*
- a) is part of the normal human flora
 - b) is Germ tube test positive
 - c) grows well under anaerobic conditions
 - d) infections only occur in immunocompromised patients
 - e) can cause oesophagitis in patients with AIDS
11. State whether the following are true or false regarding systemic mycoses.
- a) They are caused by dimorphic fungi.
 - b) They are transmitted through the inhalation of fungal spores.
 - c) Histoplasmosis is best diagnosed by culturing biopsy specimens.
 - d) These infections commonly spread from one person to another.
 - e) Amphotericin B is used to treat systemic fungal infections.
12. Caspofungin is used in the treatment of
- a) febrile neutropenia
 - b) invasive aspergillosis
 - c) resistant candidiasis
 - d) cryptococcal meningitis
 - e) pneumocystosis

13. A six-year-old girl presented with severe throat pain and high fever. Her temperature was 38.8°C, tonsils were enlarged with exudate and anterior cervical lymph nodes were palpable and tender. Investigations useful for the aetiological diagnosis include
- throat culture
 - rapid antigen detection test (RADT) on throat swab
 - anti-streptolysin O titer (ASOT)
 - Panton-Valentine Leukocidin (PVL) test
 - Blood culture/ABST
14. *Clostridium perfringens* food poisoning
- is transmitted from person to person
 - has an incubation period of 1 - 6 hours
 - is due to preformed toxin
 - patients present with abdominal cramps and intense watery diarrhoea
 - does not need antibiotic treatment
15. Epiglottitis
- occurs mostly in the elderly
 - is commonly caused by non-typeable *Haemophilus influenzae*
 - when suspected, should be confirmed by immediate throat examination
 - is best treated with parenteral ceftriaxone
 - can be prevented by vaccine
16. State whether the following are true or false regarding *Escherichia coli* (*E. coli*).
- E. coli* can cause neonatal meningitis.
 - Enterohaemorrhagic *E. coli* is a major cause of traveller's diarrhoea.
 - Uropathogenic *E. coli* possesses pili for adhesion.
 - Enterotoxigenic *E. coli* produces shiga toxin.
 - Enteroggregative *E. coli* causes persistent diarrhoea.
17. State whether the following are true or false regarding *Salmonella* spp.
- Salmonella* spp are facultative intracellular pathogens.
 - Humans are the only carriers of non-typhoidal *Salmonella*.
 - Rose spots are seen in non-typhoidal *Salmonella* infections.
 - Carriers of *Salmonella typhi* may remain asymptomatic.
 - Blood culture for isolation of *Salmonella typhi* is most sensitive in the first week of illness.
18. *Klebsiella pneumoniae*
- is an encapsulated organism
 - lung infection produces rust-coloured sputum
 - infections are commonly hospital-acquired
 - can produce extended-spectrum beta-lactamases (ESBL)
 - can cause meningitis
19. Parainfluenza virus
- exists as a single serotype
 - can be transmitted by direct person to person contact
 - can cause common cold syndrome in older children

- d) is an important cause of croup
- e) infection is treated with oseltamivir

20. Seasonal influenza

- a) can be severe in the later stage of pregnancy
- b) can be complicated by secondary bacterial pneumonia
- c) if severe, should be treated with antiviral
- d) patients admitted to the wards should be managed with contact and droplet precautions
- e) can be prevented by vaccine

21. Varicella-zoster virus (VZV)

- a) can be acquired by inhalation of aerosols from vesicular fluid of skin lesions
- b) primary infection commonly occurs in the elderly
- c) infection is less severe in children compared to adults
- d) reactivation is known as herpes labialis
- e) latent infection can be eradicated by antiviral treatment

22. Epstein-Barr virus (EBV)

- a) primarily infects B lymphocytes
- b) can cause generalized lymphadenopathy
- c) can remain latent in epithelial cells
- d) can cause hepatitis
- e) infection can be specifically diagnosed using the monospot test

23. State whether the following are true or false regarding dengue fever (DF) and dengue haemorrhagic fever (DHF).

- a) A dengue vaccine is currently used in Sri Lanka for prevention.
- b) The critical phase of dengue occurs after defervescence.
- c) Platelet count rises in the critical phase of DHF.
- d) Dengue infection confers lifelong immunity to all serotypes.
- e) DHF may progress to dengue shock syndrome.

24. State whether the following are true or false regarding rubella.

- a) Koplik spots are formed in rubella.
- b) Congenital rubella syndrome is a risk if infection occurs during early pregnancy.
- c) Rubella typically presents with a descending rash.
- d) Subacute sclerosing panencephalitis (SSPE) is a complication of rubella.
- e) Encephalitis is a common complication of rubella in adults.

25. State whether the following are true or false regarding the viruses and their associated malignancies.

- a) Human papillomavirus - cervical cancer
- b) Hepatitis A virus - hepatocellular carcinoma
- c) Human T-lymphotropic virus 1 (HTLV-1) - Adult T-cell leukaemia
- d) Merkel cell polyomavirus - Kaposi's sarcoma
- e) Adenovirus - lung cancer

26. State whether the following statements are true or false regarding the organisms causing sexually transmitted infections (STIs).
- a) *Chlamydia trachomatis* commonly causes purulent urethritis.
 - b) Herpes simplex virus type 1 commonly causes genital herpes.
 - c) Condylomata lata are seen in human papilloma viral infection.
 - d) *Haemophilus ducreyi* causes chancroid.
 - e) *Neisseria gonorrhoeae* can cause neonatal conjunctivitis.
27. A 58-year-old woman was admitted with a history of fever with chills, left loin pain and tenderness for two days. Her urine full report revealed field full of pus cells and occasional red cells. State whether the following are true or false regarding the infection in this patient.
- a) Most probable diagnosis is cystitis.
 - b) She could have acquired this infection through haematogenous spread.
 - c) Urine culture/ABST should be done in this patient.
 - d) Blood culture/ABST is not necessary in this patient.
 - e) Empirical antibiotic is not necessary in this patient.
28. A 62-year-old diabetic patient was admitted with a history of fever for two days and altered level of consciousness. His temperature was 38.8°C and blood pressure 90/55mmHg. Sepsis was one of the differential diagnoses. State whether the following are true or false regarding sepsis.
- a) Persisting hypotension requiring vasopressors to maintain mean arterial pressure ≥ 65 mmHg despite adequate volume resuscitation is known as sepsis.
 - b) Sepsis is caused by abnormalities in both immune and non-immune pathways.
 - c) Quick SOFA (qSOFA) score is used to confirm sepsis.
 - d) Antibiotics should be started within the first hour of recognition of sepsis.
 - e) Parenteral antibiotics should be given as the initial management.
29. A 23-year-old previously well university student was admitted with a history of sudden onset of high fever and headache. On examination, he had neck stiffness. State whether the following are true or false regarding the infection in this patient.
- a) Absence of petechial rash excludes *Neisseria meningitidis* infection.
 - b) HIV infection should be ruled out if the causative agent is *Streptococcus pneumoniae*.
 - c) *Haemophilus influenzae* is a common cause of meningitis in this age group.
 - d) Blood culture/ABST should be done.
 - e) Ceftriaxone is used in the empirical treatment.
30. A seven-year-old girl was admitted with a history of painful swelling of her right knee for three days associated with fever. She had painful swelling of her left ankle a week ago. She had pharyngitis three weeks ago. On examination, her right knee was very tender and warm to touch. State whether the following are true or false regarding the infection in this patient.
- a) The most probable diagnosis is septic arthritis.
 - b) It is an immune mediated disease.
 - c) Raised anti-streptolysin O titer (ASOT) is useful in the diagnosis.
 - d) Blood culture/ABST is a useful investigation in this patient.
 - e) Flucloxacillin is the best choice antibiotic for the treatment of this patient.
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